

# Interim Seismic Retrofit-East Bay 504, Trusses (Contract No. 04-043004)

The as-built drawings, which are contained in these CDs, are scanned from drawings of the existing structure for the convenience of the contractor and as a means to convey to the contractor the available information regarding the existing structure. It is to be understood that no claim is being made as to the accuracy or completeness of the said information and that the State of California or its officers or agents shall not be responsible for the manner in which the contractor interprets and uses this information or for the accuracy, currency or completeness of these scanned as-built drawings. The contractor shall be responsible to obtain, at the contractor's expense, any additional information that the contractor deems necessary for completely and accurately assessing the existing conditions of the structure. The contractor shall not be entitled to any compensation for any claim arising from inaccuracy or insufficiency of these as-built drawings or in anyway related to these drawings.

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# LEGEND

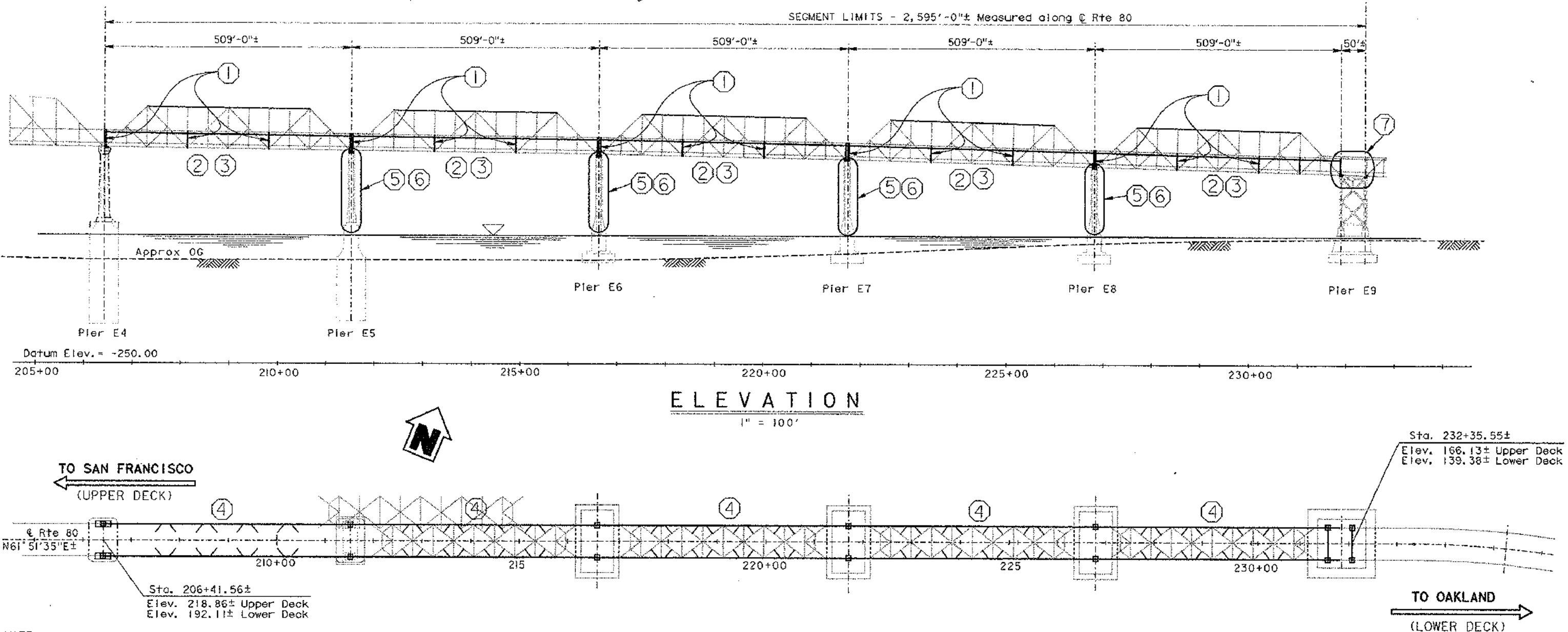
- Indicates Existing Structure
- Indicates New Construction
- ① Retrofit Truss (Verticals L0, L4, L8, L12)
- ② Retrofit Truss Floor Beam (Lower End)
- ③ Retrofit Truss Floor Beam (Upper)
- ④ Retrofit Truss (Top Lateral Bracing)
- ⑤ Retrofit Towers E5 to E8 (Rivet Removal & Replacement with HS Bolts)
- ⑥ Retrofit Tower E5 to E8 (Upper Bracing)
- ⑦ Retrofit Tower E9 (Rivet removal & replacement with HS bolts, remove longitudinal strut, New West Shoe Seat extensions, New West Damper Assembly, New West Transverse Guide, East Shoe Bolt removal, 50' Span Seat Extensions, West Shoe Bolt replacement and West Shoe Bolt blocking.)

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	123	205

*Stephen W. Mitchell*  
REGISTERED ENGINEER - CIVIL  
November 3, 1997

12-8-97  
PLANS APPROVAL DATE

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NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

Note:  
For General Notes and Quantities, see "Index to Plans" sheet.

DESIGN BY S. Mitchell		CHECKED T. Sadek		LAYOUT BY <i>Michael J. Sadek</i>		CHECKED S. Mitchell		PLANS AND SPECS CHECKED		STATE OF CALIFORNIA		DIVISION OF STRUCTURES		BRIDGE NO. 33-0025		POST MILE 1.15		SAN FRANCISCO-OAKLAND BAY BRIDGE		GENERAL PLAN NO. 1	
DETAILS BY <i>Michael J. Sadek</i> 04-9		CHECKED S. Mitchell		SPECIFICATIONS BY <i>Michael J. Sadek</i>		CHECKED S. Mitchell		PLANS AND SPECS CHECKED		DEPARTMENT OF TRANSPORTATION		TOLL BRIDGE SPECIAL ANALYSIS		CU 04		EA 043001		DISREGARD PRINTS BEARING EARLIER REVISION DATES		DIVISION DATES (PRELIMINARY STAGE ONLY)	
QUANTITIES BY S. Mitchell		CHECKED		BY		BY		BY		BY		BY		BY		BY		BY		BY	

05 OSD 206 (04/95)  
net/tsws229/proj/04 043h

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

USERNAME >> trachf  
dagpl\_09075913

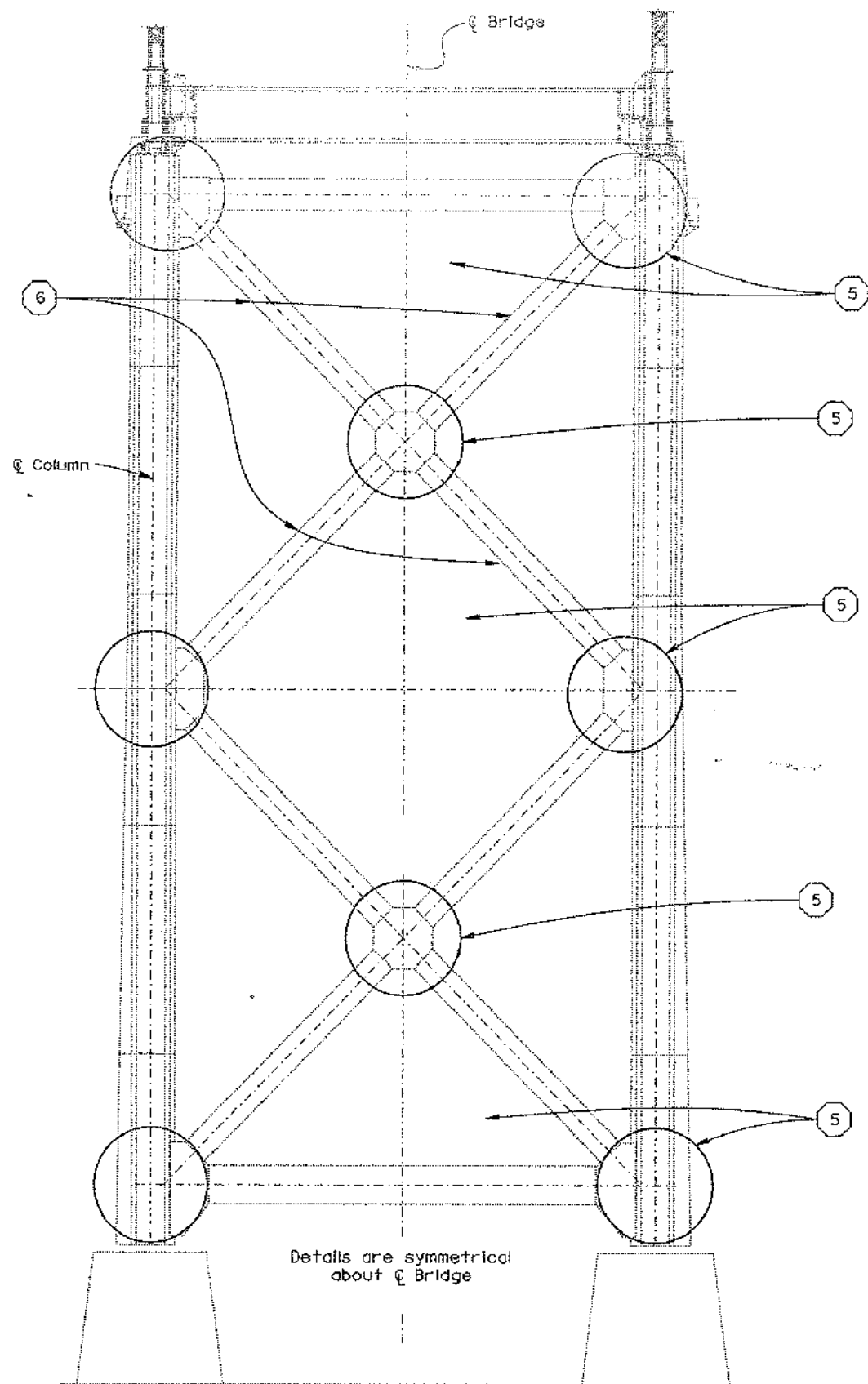
DATE PLOTTED >> 9-Dec-1997  
TIME PLOTTED >> 08:11

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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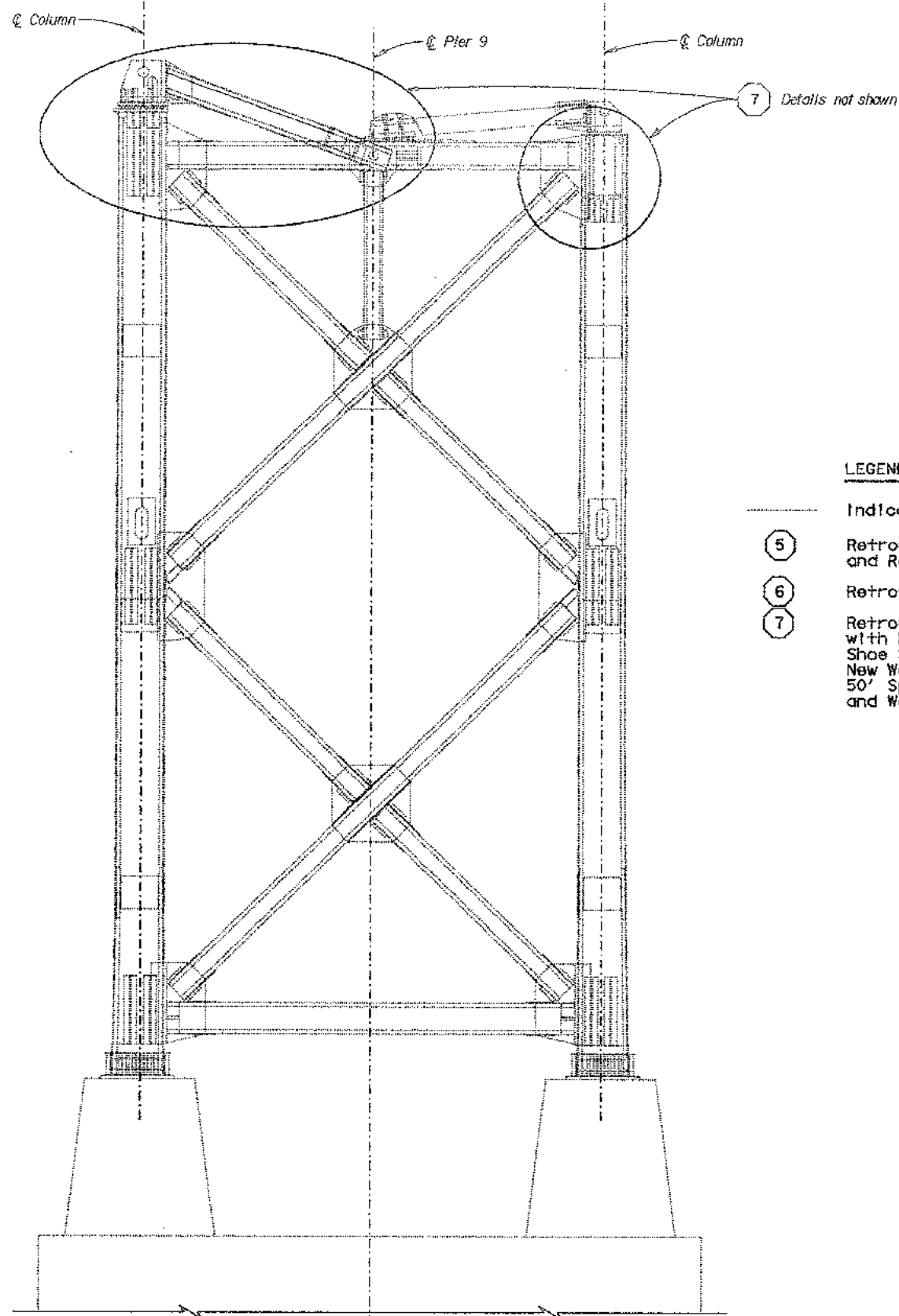
*Stephen W. Mitchell*  
REGISTERED ENGINEER - CIVIL  
November 3, 1997

12-8-97  
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**TOWERS E5 TO E8 - TYPICAL SECTION**  
1"=10'-0"



**TOWER E9 - ELEVATION**  
1/8"=1'-0"

**LEGEND**

- Indicates existing structure
- 5 Retrofit Towers E5 to E8 (Rivet Removal and Replacement with HS Bolts.)
- 6 Retrofit Tower E5 to E8 (Upper Bracing)
- 7 Retrofit Tower E9 (Rivet Removal & Replacement with HS bolts, remove Longitudinal Strut, New West Shoe Seat Extensions, New West Damper Assembly, New West Transverse Guide, East Shoe Bolt Removal, 50' Span Seat Extensions, West Shoe Bolt Replacement and West Shoe Bolt Blocking.)

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ANY MATERIAL.

INTERIM SEISMIC RETROFIT PROJECT	
EAST BAY 504 TRUSSES	
SAN FRANCISCO-OAKLAND BAY BRIDGE	
GENERAL PLAN NO.2	

BRIDGE NO. 33-0025	POST MILE 1.15
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DESIGN BY S. Mitchell CHECKED T. Sadek	LOAD FACTOR DESIGN LIVE LOADING: HS20-44 AND ALTERNATIVE AND PERMIT DESIGN LOAD
DETAILS BY N. Tapalla CHECKED S. Mitchell	LAYOUT BY N. Tapalla CHECKED S. Mitchell
QUANTITIES BY S. Mitchell CHECKED T. Sadek	SPECIFICATIONS BY CHECKED

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN TOLL BRIDGE SPECIAL ANALYSIS
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CU 04 EA 043001	REVISION DATES (PRELIMINARY STAGE ONLY)
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DATE PLOTTED 9-DEC-1997 TIME PLOTTED 08:11	USERNAME: trr1chf dagg2_09075919
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*Ray Zelnick*  
DESIGN ENGINEER  
05 OSD 2138 (CADD 10/95)

ORIGINAL SCALE IN INCHES  
FOR REDUCED PLANS

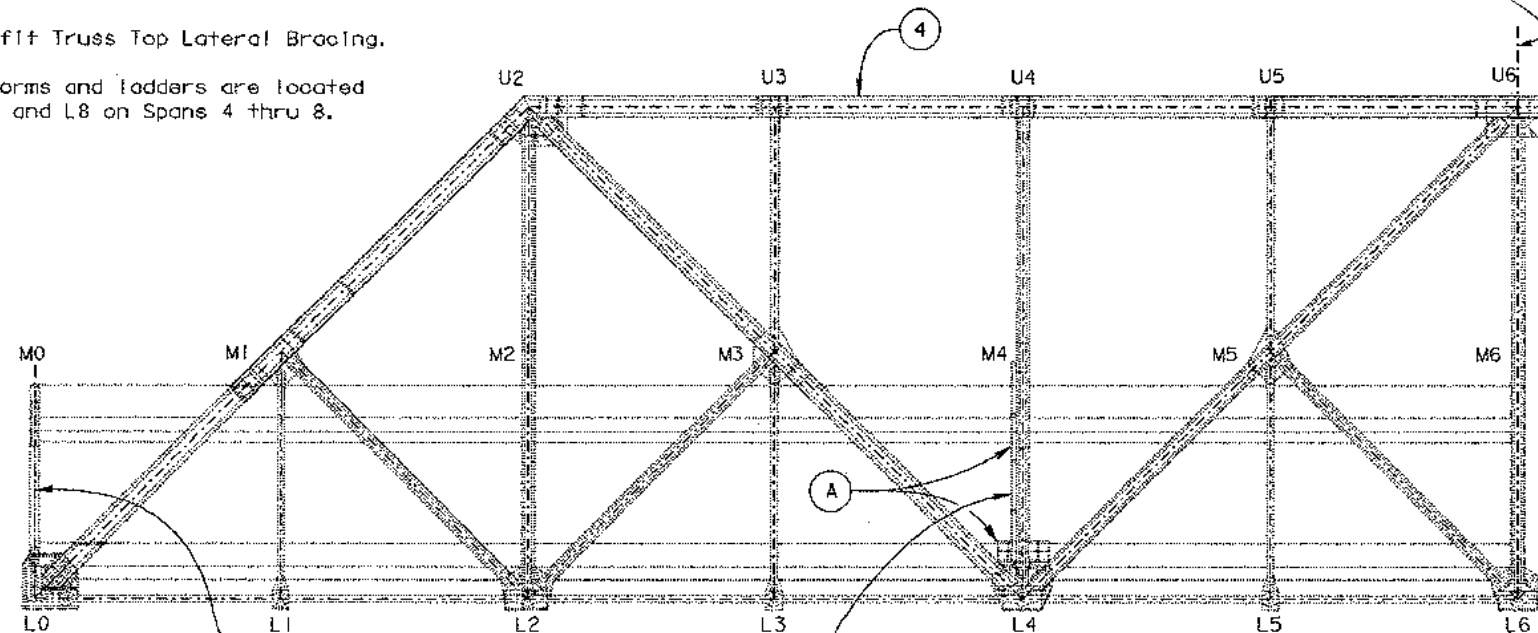
DATE PLOTTED 9-DEC-1997  
TIME PLOTTED 08:11

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	125	205

*Stephen W. Mitchell*  
 REGISTERED ENGINEER - CIVIL  
 November 3, 1997  
 12-8-97  
 PLANS APPROVAL DATE

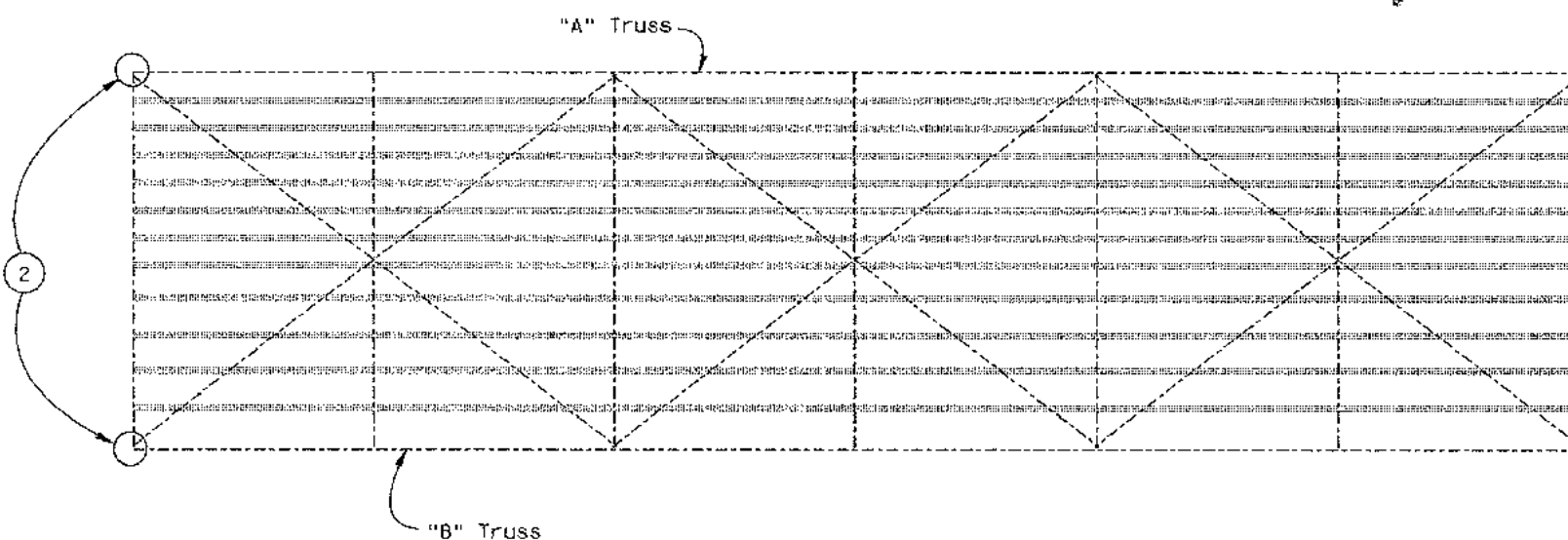
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

- Retrofit Legend**
- ① - Retrofit Truss Verticals L0, L4, L8 and L12 (North and South Truss).
  - ② - Retrofit Truss Lower Floor Beam @ L0 and L12.
  - ③ - Retrofit all Truss Upper Floor Beams L0 thru L12.
  - ④ - Retrofit Truss Top Lateral Bracing.
  - (A) - Platforms and ladders are located at L4 and L8 on Spans 4 thru 8.



**PART ELEVATION (TYPICAL)**

1/16" = 1'-0"



**PART PLAN - LOWER DECK (TYPICAL)**

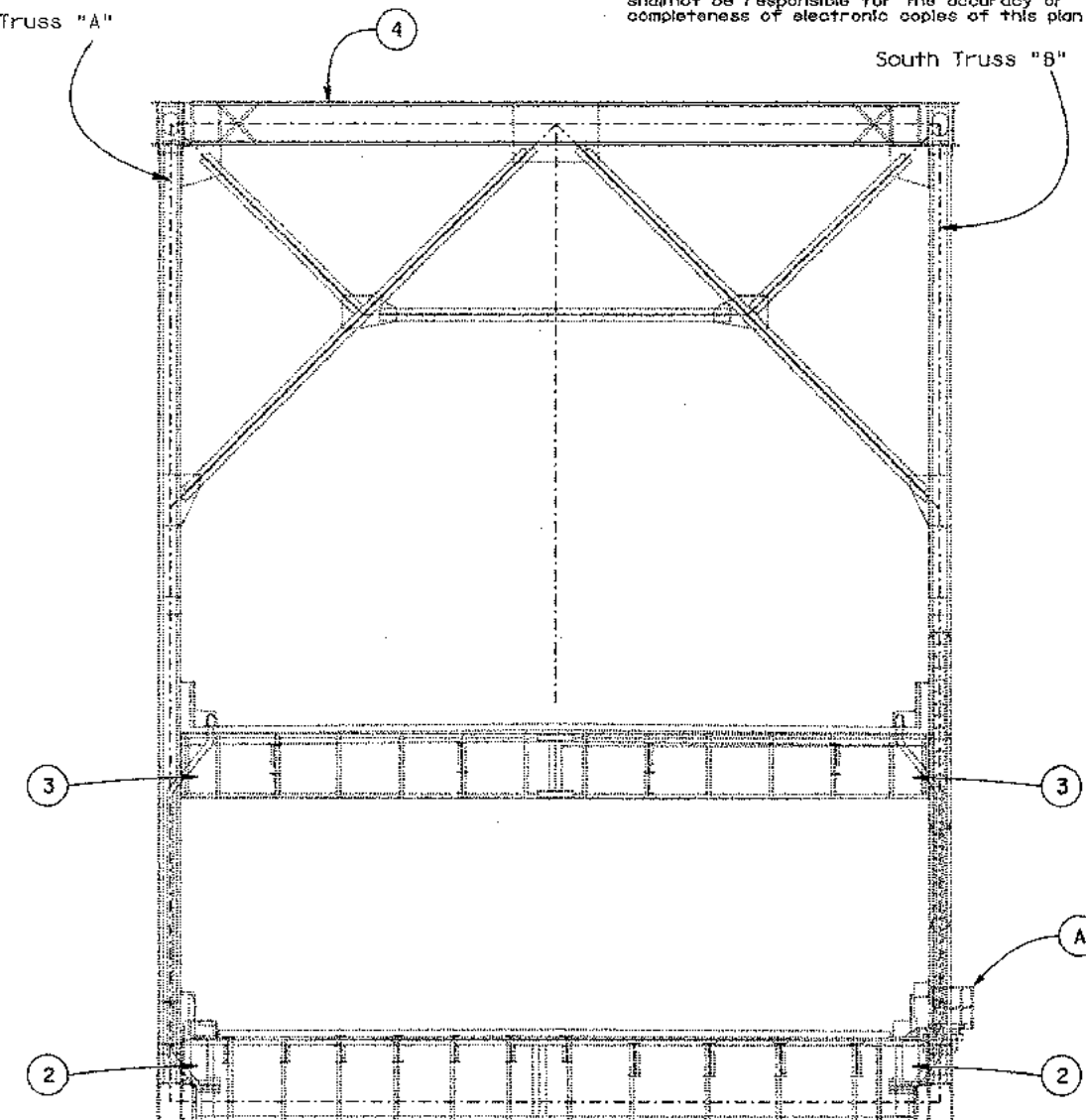
1/16" = 1'-0"

NOTE:  
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Symmetrical about C Span

North Truss "A"

South Truss "B"



**TYPICAL SECTION**

1/8" = 1'-0"

----- Indicates existing structure  
 ----- Indicates new construction

INTERIM SEISMIC RETROFIT PROJECT  
 EAST BAY 504 TRUSSES  
 SAN FRANCISCO-OAKLAND BAY BRIDGE  
 GENERAL PLAN NO.3

 DESIGN ENGINEER	DESIGN	BY T. Sadek	CHECKED S. Mitchell	LOAD FACTOR DESIGN	LIVE LOADING: HS20-44 AND ALTERNATIVE AND PERMIT DESIGN LOAD	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN TOLL BRIDGE SPECIAL ANALYSIS	BRIDGE NO.	33-0025	SAN FRANCISCO-OAKLAND BAY BRIDGE GENERAL PLAN NO.3	
	DETAILS	BY B. Glison	CHECKED T. Sadek	LAYOUT	BY B. Glison			CHECKED T. Sadek	POST MILE		1.15
	QUANTITIES	BY T. Sadek	CHECKED S. Mitchell	SPECIFICATIONS	BY				CHECKED		

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 0 1 2 3  
 CU 04  
 EA 043001

DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 REVISION DATES (APPROPRIATE STAGE ONLY)  
 5-28-91 5-31-91 6-28-91 10-23-91  
 SHEET 3 OF 29

USERNAME > 1rmdr1ok  
 ddb3\_09085252

DATE PLOTTED > 8-Dec-1997  
 TIME PLOTTED > 09:34

GENERAL NOTES  
LOAD AND RESISTANCE FACTOR DESIGN

DESIGN: BRIDGE DESIGN SPECIFICATIONS  
(1983 AASHTO with Interims and Revisions by CALTRANS),  
1993 AISC LRFD Specification, SFOBB west spans  
Seismic Retrofit Design Criteria,  
1994 AASHTO LRFD Design Specification

STRUCTURAL  
STEEL: Existing truss superstructure: (Based on original  
bridge specification.)

Carbon Steel Fy=37.0 ksi, Fu=62.0 ksi  
Silicon Steel Fy=45.0 ksi, Fu=80.0 ksi  
Carbon Steel Rivets Fy=30.0 ksi, Fu=52.0 ksi  
Nickel Steel Fy=55.0 ksi, Fu=90.0 ksi

New Steel: ASTM A36 unless otherwise noted.  
Fy= 36 ksi

WELDS: E70XX unless otherwise noted

HIGH STRENGTH  
BOLTS: ASTM A325 unless otherwise noted

HS THREADED  
RODS: ASTM A354 Grade BD unless otherwise noted

GENERAL NOTES

1. All new connection bolts shall be high strength bolts and shall conform to ASTM A325 bearing type unless otherwise noted in the plans. All high strength bolts in standard size holes shall be furnished with one washer beneath the turning element. All high strength bolts in oversized holes shall be furnished with two hardened washers (conforming to ASTM F436), with one washer beneath the bolt and with one washer beneath the nut. Heads of all bolts shall be on the outside face of the member as practical, unless otherwise noted. Bolt threads shall be excluded from the shear planes.

2. Maintenance platform & ladders, interfering with the new construction not shown in Road Plans shall be temporarily removed as required and reinstalled as approved by the Engineer.

3. Drain pipes to be removed as required for retrofit and reinstalled as approved by Engineer.

4. For utilities and highway facilities, such as air, water and electrical utility relocation, see Road Plans.

5. For traffic controls, see Road Plans.

6. The following symbols appear on Plan Detail sheets. They relate to various rivet replacement, drilled hole requirements, bolt/rod/stud sizes, etc. which are specified. The same symbol (i.e.,  $\Delta$ ) may mean a different requirement on a different sheet. Each sheet shall be a stand-alone sheet relative to symbols given in the legend and work specified.

Symbols



FLOOR BEAM RIVET REMOVAL & REPLACEMENT

INSTALLATION NOTES:

1. Rivet replacement with HS bolts shall begin with the center-most pair of rivets and continue, by pairs, alternating above and below the starting pair.
2. All bolts shall be fully tensioned prior to removing any additional rivets.
3. Only one end of a floor beam shall be worked on at any one time.
4. Only non-adjacent floor beam ends shall be worked on simultaneously.
5. New bolts shall be the same size, or larger as required, as the rivets being replaced.
6. Rivets which cannot be removed without damaging the adjacent steel shall be cored out, leaving a hole  $\frac{3}{16}$ " larger in diameter than the diameter of the removed rivet. The new HS bolt shall have a diameter which is  $\frac{1}{16}$ " smaller than the cored hole.

TOWER RIVET REMOVAL & REPLACEMENT

INSTALLATION NOTES:

1. Rivet replacement with HS bolts shall begin with the center-most rivets in any given member-end and continue outward in a concentric pattern. No more than 10% of the total rivets to be replaced in a single face of any single member end may be worked on at one time.
2. Only one member-end per gusset shall be worked on at one time and must be completed before work commences on any additional member-ends within the same gusset.
3. Only one face of a gusset shall be worked on at any one time.
4. All HS bolts shall be fully tensioned prior to removing any additional rivets.
5. New HS bolts shall be the same size, or larger as required, as the rivets being replaced.
6. Rivets which cannot be removed without damaging the adjacent steel shall be cored out, leaving a hole  $\frac{3}{16}$ " larger in diameter than the diameter of the removed rivet. The new HS bolt shall have a diameter which is  $\frac{1}{16}$ " smaller than the cored hole.

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	126	205

REGISTERED ENGINEER - CIVIL  
November 3, 1997

12-8-97  
PLANS APPROVAL DATE

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TRUSS VERTICAL MEMBER RETROFIT

1. Truss vertical member retrofit on the north and south trusses to be retrofitted one truss at a time.
2. For each individual truss, a maximum of 2 vertical members per truss to be retrofitted at any one time. For retrofitting 2 members simultaneously within each truss, those members are to be L0-M0 & L8-M8 or L4-M4 & L12-M12.

INDEX TO PLANS

SHEET NO.	TITLE
1.	GENERAL PLAN NO. 1
2.	GENERAL PLAN NO. 2
3.	GENERAL PLAN NO. 3
4.	INDEX TO PLANS
5.	TRUSS VERTICAL (L0-M0), (L12-M12)
6.	TRUSS VERTICAL (L4-M4), (L8-M8)
7.	TRUSS VERTICAL DETAILS NO. 1
8.	TRUSS VERTICAL DETAILS NO. 2
9.	TRUSS VERTICAL DETAILS NO. 3
10.	TRUSS VERTICAL DETAILS NO. 4
11.	TRUSS VERTICAL DETAILS NO. 5
12.	LOWER FLOOR BEAMS DETAILS
13.	UPPER FLOOR BEAM DETAILS
14.	TOP LATERAL BRACING DETAILS
15.	TOWERS E5 - E8 RIVET REPLACEMENT
16.	TOWERS E5 - E8 LONGITUDINAL STIFFENERS
17.	TOWER E9 WEST DETAILS NO. 1
18.	TOWER E9 WEST DETAILS NO. 2
19.	TOWER E9 WEST DETAILS NO. 3
20.	TOWER E9 WEST DETAILS NO. 4
21.	TOWER E9 MISCELLANEOUS DETAILS
22.	DAMPER ASSEMBLY
23.	DAMPER ASSEMBLY DETAILS
24.	STRUCTURE PLAN 50' SPAN - UPPER DECK
25.	UPPER DECK SEAT EXTENDER DETAILS NO. 1
26.	UPPER DECK SEAT EXTENDER DETAILS NO. 2
27.	STRUCTURE PLAN 50' SPAN - LOWER DECK
28.	LOWER DECK SEAT EXTENDER DETAILS NO. 1
29.	LOWER DECK SEAT EXTENDER DETAILS NO. 2

STANDARD PLANS DATED JULY 1995

A10A ABBREVIATIONS

INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES

SAN FRANCISCO-OAKLAND BAY BRIDGE

INDEX TO PLANS

NOTE:  
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BEFORE ORDERING OR FABRICATING  
ANY MATERIAL.

DESIGN	BY S. Mitchell	CHECKED T. Sadek	STATE OF CALIFORNIA	DIVISION OF STRUCTURES	BRIDGE NO. 33-0025
DETAILS	BY JF Cesarina	CHECKED S. Mitchell	DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN	POST MILE 1.15
QUANTITIES	BY S. Mitchell	CHECKED T. Sadek		TOLL BRIDGE SPECIAL ANALYSIS	

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 04  
EA 043001

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

DATE PLOTTED 9-DEC-1997  
TIME PLOTTED 4:09:35

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	127	205
<b>Stephen W. Mitchell</b> REGISTERED ENGINEER - CIVIL November 3, 1997					
12-8-97 PLANS APPROVAL DATE					

REGISTERED PROFESSIONAL ENGINEER

STEPHEN MITCHELL

No. 39788

Exp. 12-31-97

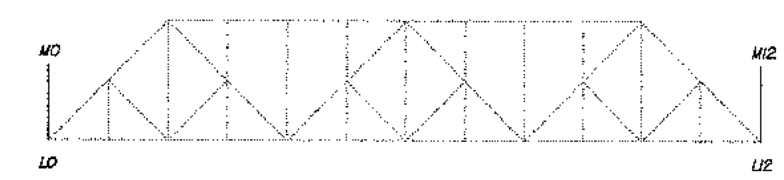
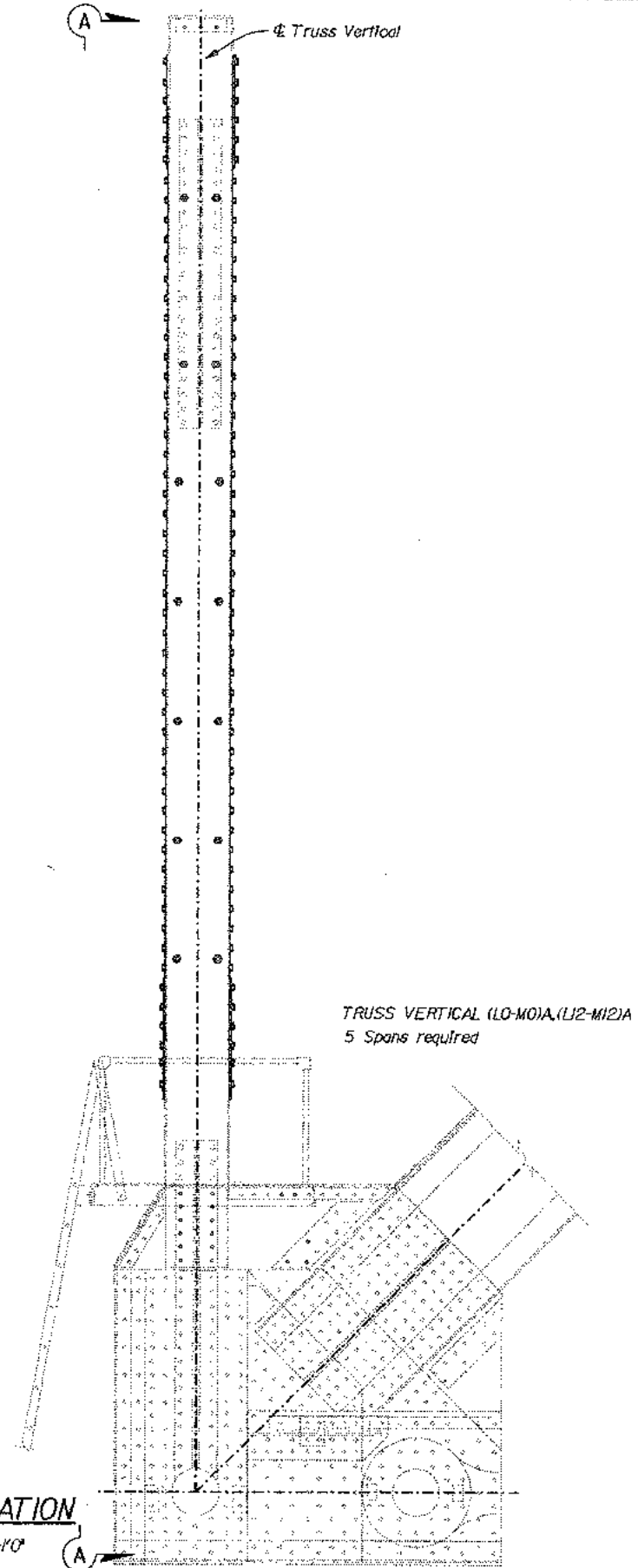
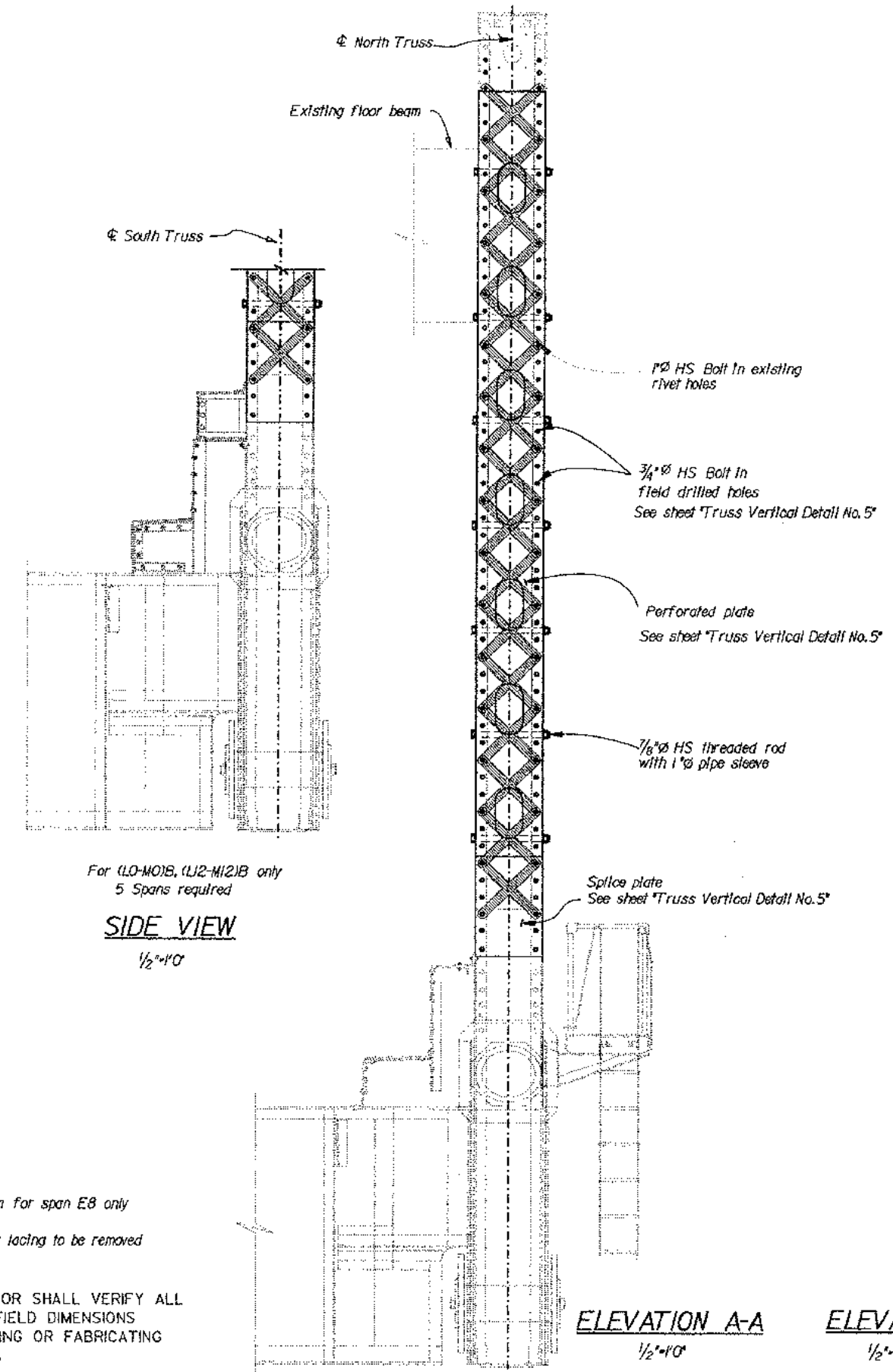
CIVIL

STATE OF CALIFORNIA

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Construction Sequence

1. Stage 1 lacing removal (see "Truss Vertical Details No. 4" sheet) east side only
2. Install channel bracing assembly, tot 2 (see "Truss Vertical Details No. 4" sheet)
3. Install pipe bracing assembly, tot 12 (see "Truss Vertical Details No. 4" sheet)
4. Stage 2 lacing removal (see "Truss Vertical Details No. 5" sheet) east side only
5. Install perforated plate (see "Truss Vertical Details No. 5" sheet) east side only
6. Install gusset plate (see "Truss Vertical Details No. 5" sheet) east side only
7. Stage 3 lacing removal (see "Truss Vertical Details No. 5" sheet) west side only
8. Install perforated plate (see "Truss Vertical Details No. 5" sheet) west side only
9. Install gusset plate (see "Truss Vertical Details No. 5" sheet) west side only



Note:  
Ladder & platform for span E8 only  
Existing lacing to be removed  
NOTE:  
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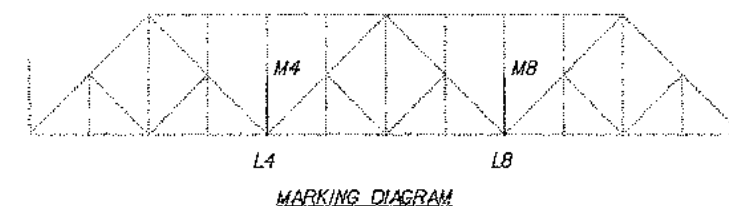
DESIGN BY M. Pope DETAILS BY G. Leung QUANTITIES BY M. Pope				CHECKED BY T. Sadek J. Avila G. Leung		STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		DIVISION OF STRUCTURES STRUCTURE DESIGN TOLL BRIDGE SPECIAL ANALYSIS		BRIDGE NO. 33-0025 POST MILE L15		INTERIM SEISMIC RETROFIT PROJECT EAST BAY 504 TRUSSES SAN FRANCISCO OAKLAND BAY BRIDGE TRUSS VERTICAL (L0-M0), (L12-M12)	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS						CU 04 EA 043004		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES (PRELIMINARY STAGE ONLY)		SHEET 5 OF 29	
USERNAME: srmartok d0tv11_09085305													

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	128	205


*Stephen W. Mitchell*  
 REGISTERED ENGINEER - CIVIL  
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### Construction Sequence



TRUSS VERTICAL (L4-M4)A, (L8-M8)A  
TRUSS VERTICAL (L4-M4)A6, (L8-M8)A6 Similar  
5 Spans required, North Truss shown,  
South Truss similar.

 Existing loadings to be removed

NOTE:  
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BEFORE ORDERING OR FABRICATING  
ANY MATERIAL.

ELEVATION A-A  
1/2"=10'

ELEVATION  
1/2" = 100'

DESIGN	BY D. Alvarez	CHECKED T. Sadek
DETAILS	BY G. Loung	CHECKED T. Sadek
QUANTITIES	BY D. Alvarez	CHECKED G. Loung

STATE OF  
CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

## DIVISION OF STRUCTURES STRUCTURE DESIGN

BRIDGE NO.	33-0025
POST MILE	45

INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES  
SAN FRANCISCO OAKLAND BAY BRIDGE  
TRUSS VERTICAL (L4-M4), (L8-M8)

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)										SHEET	OF
	6-3-91	6-2-91	6-1-91	5-31-91	5-28-91	5-25-91	5-22-91				6	29

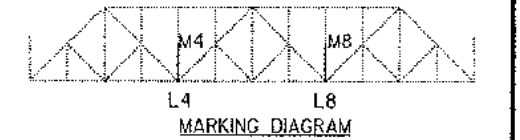
PIPE BRACING ASSEMBLY:  
 $\frac{1}{8}$ "  $\phi$  A449 galv threaded rod with 1"  $\phi$  galvanized pipe sleeve in rivet holes, pipe should be snug against angles.

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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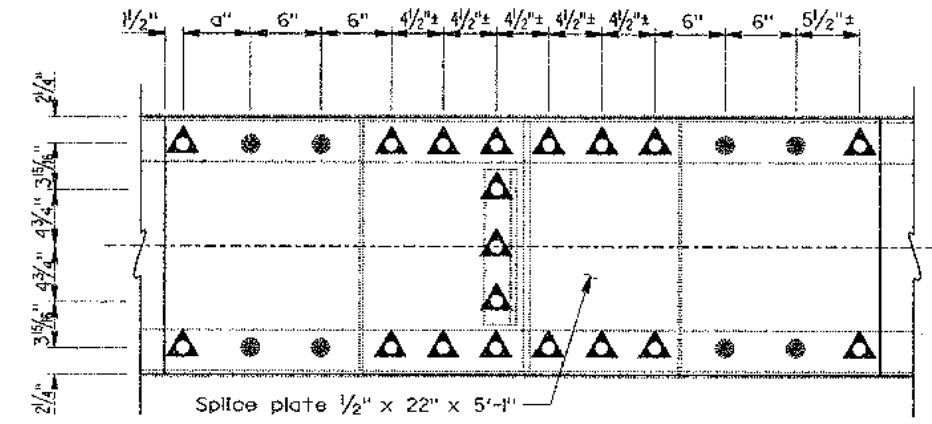
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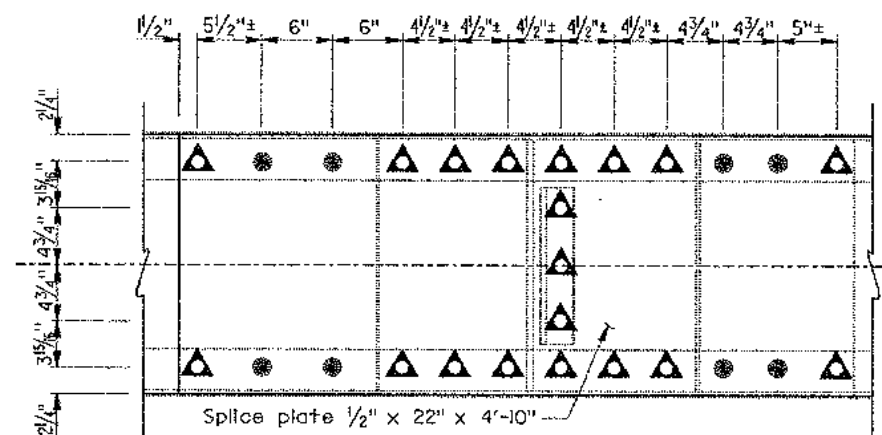
Truss Member	Dimension	a
(L4-M4)A, (L8-M8)A	42 1/2"	
(L4-M4)B, (L8-M8)B	51 1/4"	

Existing lacing to be removed after installation of bracing assembly

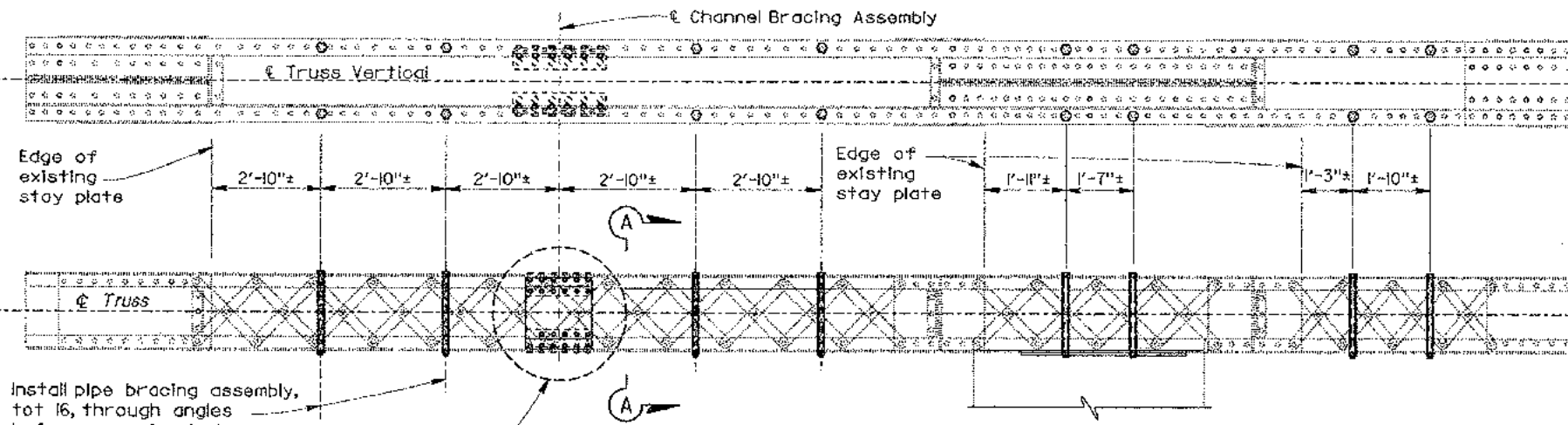
SECTION A-A  
 $\frac{1}{2}" = 1'-0"$



DETAIL 2  
 $\frac{1}{2}" = 1'-0"$

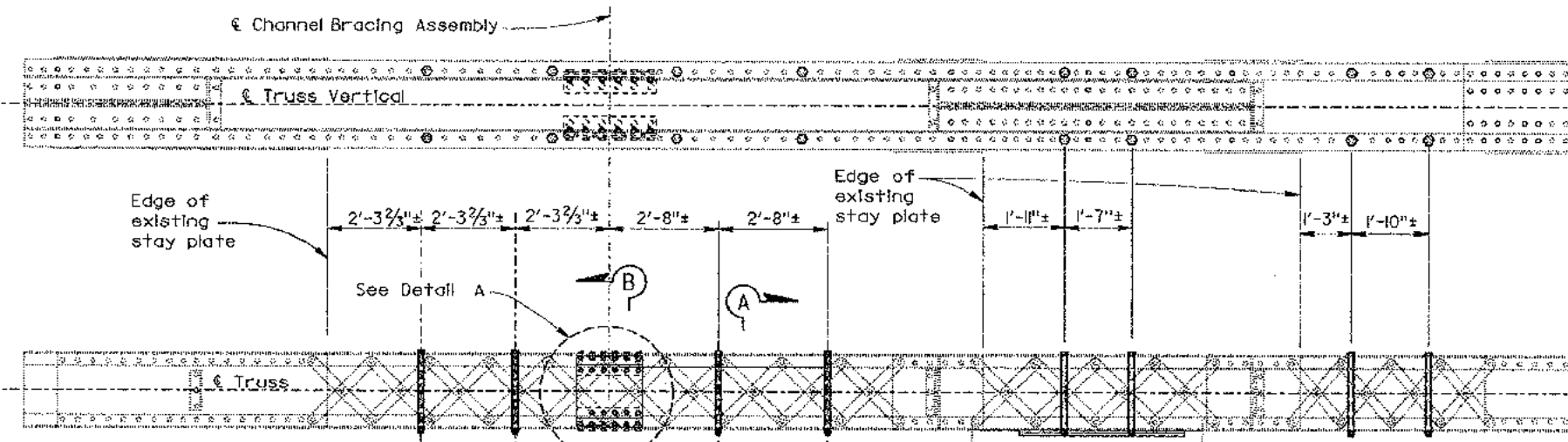


DETAIL 3  
 $\frac{1}{2}" = 1'-0"$



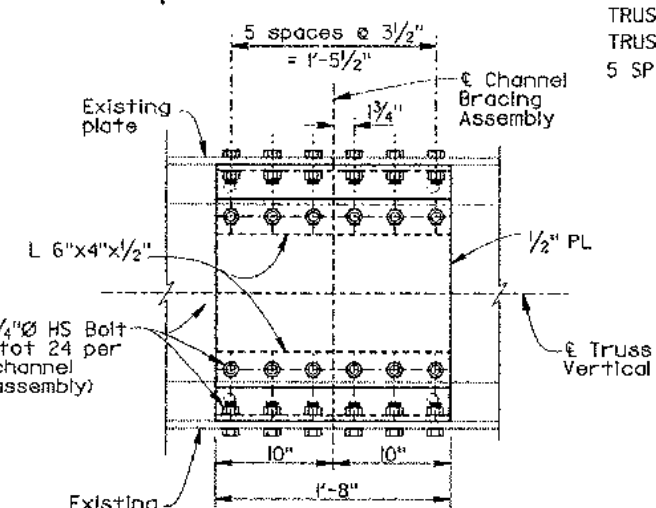
LACING ASSEMBLY DETAIL  
 $\frac{1}{2}" = 1'-0"$

TRUSS MEMBER (L4-M4)A6, (L8-M8)A6  
 TRUSS MEMBER (L4-M4)A, (L8-M8)A Similar  
 5 SPANS REQUIRED



LACING ASSEMBLY DETAIL  
 $\frac{1}{2}" = 1'-0"$

TRUSS MEMBER (L4-M4)B6, (L8-M8)B6  
 TRUSS MEMBER (L4-M4)B, (L8-M8)B Similar  
 5 SPANS REQUIRED



DETAIL A  
 $\frac{1}{2}" = 1'-0"$

LEGEND

- ▲ - Replace existing rivets with high strength bolts
- - Install high strength bolts in new holes
- - Indicates existing rivets.

NOTE:  
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DESIGN	BY: D. Alvarez	CHECKED: T. Sadek
DETAILS	BY: J. Cosentino / R. Lopez	CHECKED: T. Sadek
QUANTITIES	BY: D. Alvarez	CHECKED: G. Leung

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
 STRUCTURE DESIGN  
 TOLL BRIDGE SPECIAL ANALYSIS

BRIDGE NO.	33-0025
POST SALE	L5

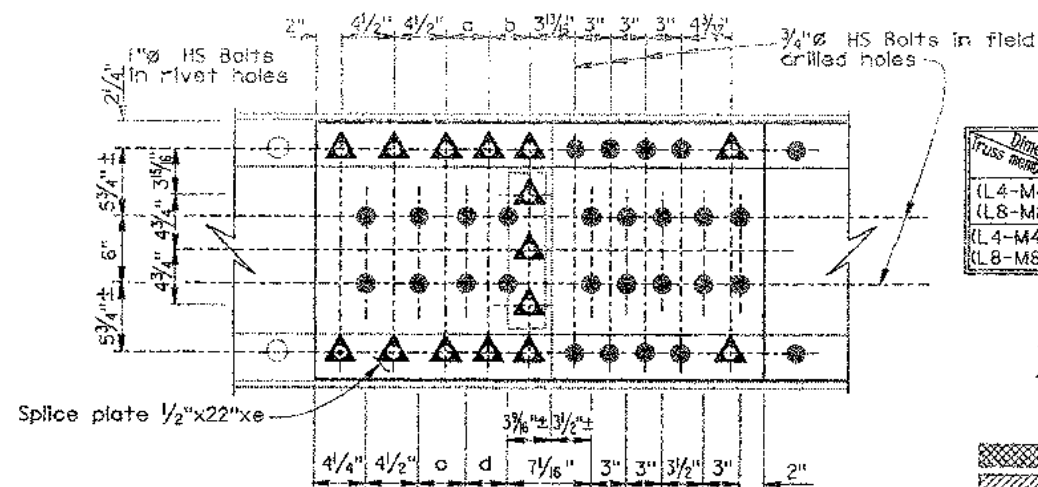
INTERIM SEISMIC RETROFIT PROJECT  
 EAST BAY 504 TRUSSES  
 SAN FRANCISCO OAKLAND BAY BRIDGE  
 TRUSS VERTICAL DETAILS NO. 1

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
12-8-97	7	29

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Ala	80	7.8/8.9, 0.0/1.1	130	205

Stephen W. Mitchell  
 REGISTERED ENGINEER - CIVIL  
 November 3, 1997  
 12-8-97  
 PLANS APPROVAL DATE

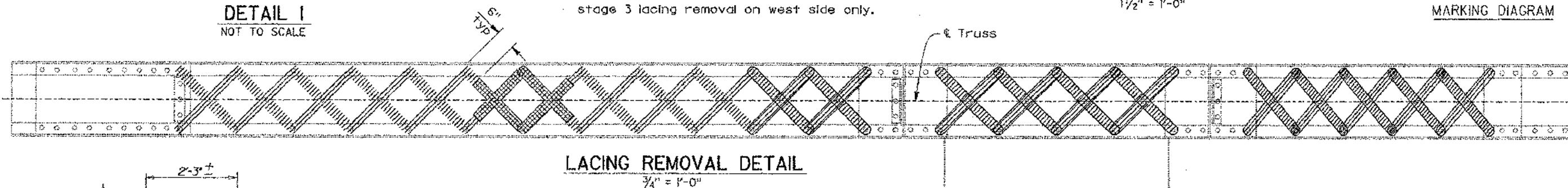
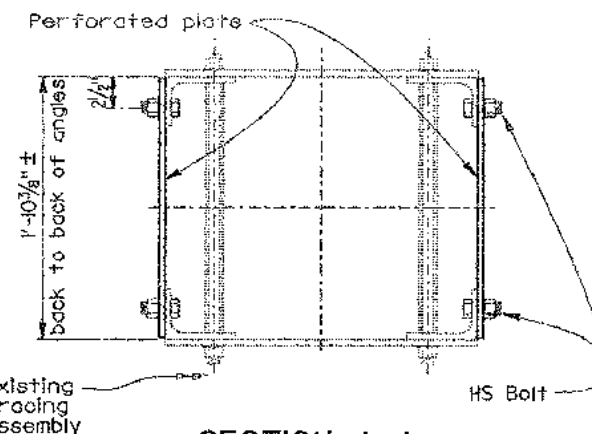
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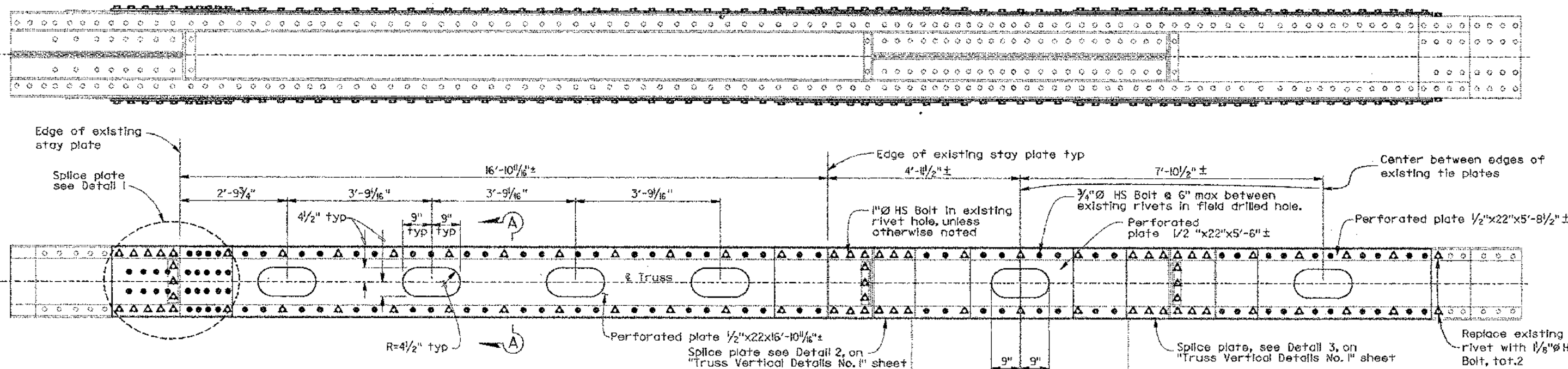
Truss member	a	b	c	d	e
(L4-M4)A, (L8-M8)A	3 5/8"	3 1/2"	4 1/8"	3 3/8"	3'-2"
(L4-M4)A6, (L8-M8)A6	4"	3 5/8"	4 1/4"	3 1/8"	3'-2 1/2"

#### LEGEND

- ▲ - Replace existing rivets with high strength bolts
- - Install high strength bolts in new holes
- - Indicates existing rivets.
- ▨ - Stage 1 lacing removal on east side only.
- ▩ - Stage 2 lacing removal on east side only/ stage 3 lacing removal on west side only.



TRUSS MEMBER (L4-M4)A6, (L8-M8)A6  
 TRUSS MEMBER (L4-M4)A, (L8-M8)A Similar  
 5 SPANS REQUIRED, NORTH TRUSS SHOWN



NOTE:  
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

5 SPANS REQUIRED, NORTH TRUSS SHOWN  
 Note: Bracing assembly not shown for clarity

#### PERFORATED PLATE DETAIL

TRUSS MEMBER (L4-M4)A6, (L8-M8)A6  
 TRUSS MEMBER (L4-M4)A, (L8-M8)A Similar

#### INTERIM SEISMIC RETROFIT PROJECT EAST BAY 504 TRUSSES

#### SAN FRANCISCO-OAKLAND BAY BRIDGE TRUSS VERTICAL DETAILS NO. 2

DESIGN	BY D. Alvarez	CHECKED T. Sadek
DETAILS	BY J. Casarino / R. Sadek	CHECKED T. Sadek
QUANTITIES	BY D. Alvarez	CHECKED G. Leung

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
 STRUCTURE DESIGN  
 TOLL BRIDGE SPECIAL ANALYSIS

BRIDGE NO.  
 33-0025  
 POST MILE  
 1.5

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

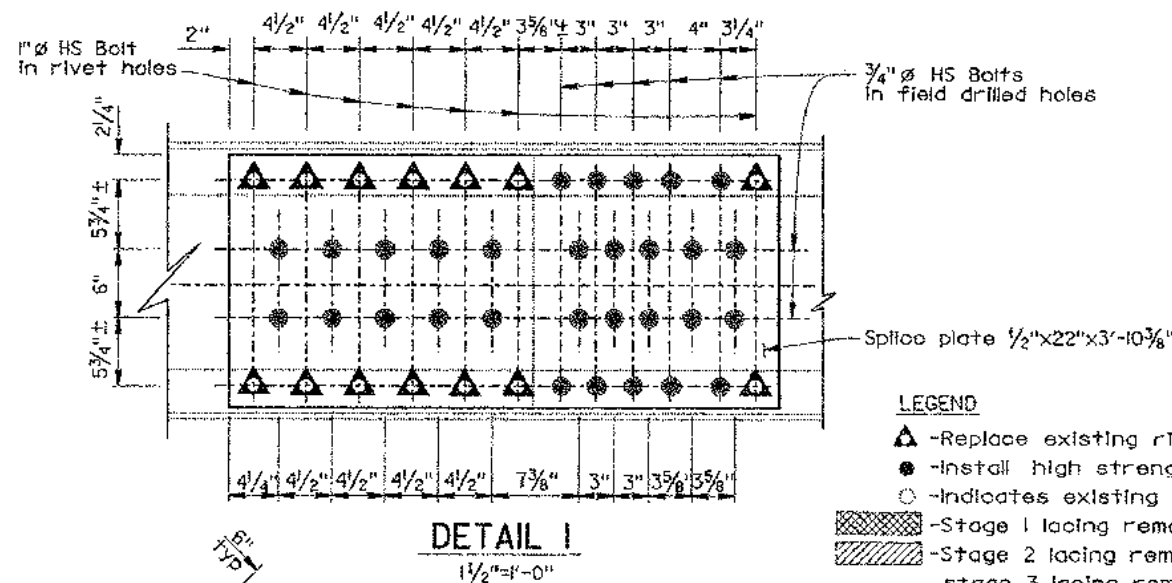
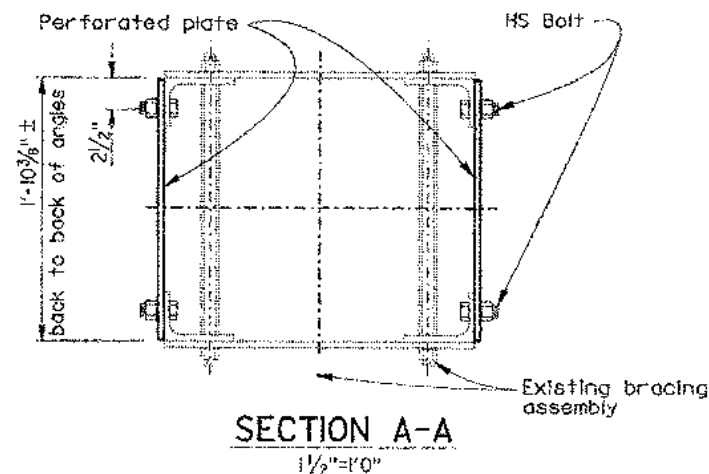
SHEET 8 OF 29

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	131	205

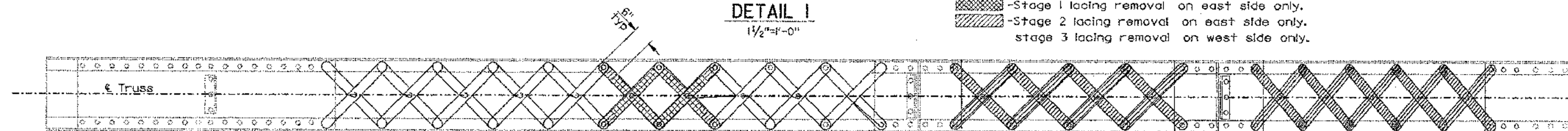
Stephen W. Mitchell  
 REGISTERED ENGINEER - CIVIL  
 November 3, 1997  
 12-8-97  
 PLANS APPROVAL DATE

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PROFESSIONAL ENGINEER  
 STEPHEN MITCHELL  
 No. 3978  
 Exp. 12-31-97  
 CIVIL  
 STATE OF CALIFORNIA

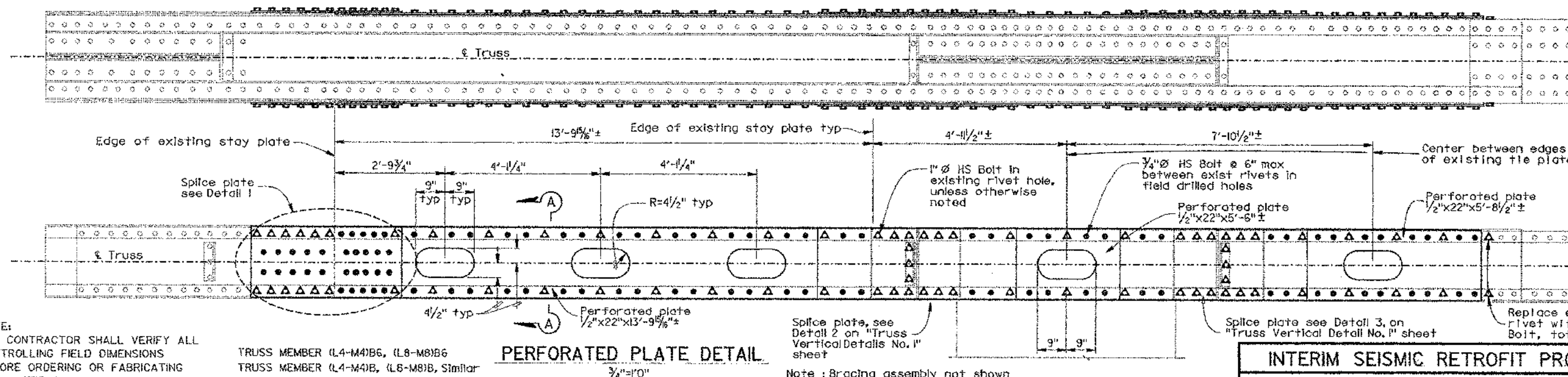


- LEGEND
- ▲ - Replace existing rivets with high strength bolts
  - - Install high strength bolts in new holes
  - - Indicates existing rivets.
  - Stage 1 lacing removal on east side only.
  - Stage 2 lacing removal on east side only.
  - Stage 3 lacing removal on west side only.



Note: Bracing assembly not shown for clarity

TRUSS MEMBER (L4-M4)B6, (L8-M8)B6  
TRUSS MEMBER (L4-M4)B, (L8-M8)B, Similar  
5 SPANS REQUIRED, SOUTH TRUSS SHOWN



NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

TRUSS MEMBER (L4-M4)B6, (L8-M8)B6  
TRUSS MEMBER (L4-M4)B, (L8-M8)B, Similar  
5 SPANS REQUIRED, SOUTH TRUSS SHOWN

Note: Bracing assembly not shown for clarity

DESIGN	BY D. Alvarez	CHECKED T. Sadak
DETAILS	BY JFCasarin/ R. A. Lopez	CHECKED T. Sadak
QUANTITIES	BY M. Pope	CHECKED C. Leung

ORIGINAL SCALE 1/4"=1'-0" INCHES FOR REDUCED PLANS

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
STRUCTURE DESIGN  
TOLL BRIDGE SPECIAL ANALYSIS

BRIDGE NO. 33-0025  
POST HOLE US

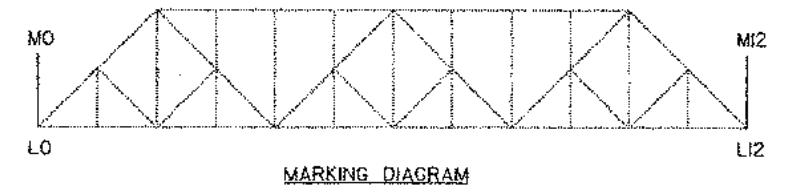
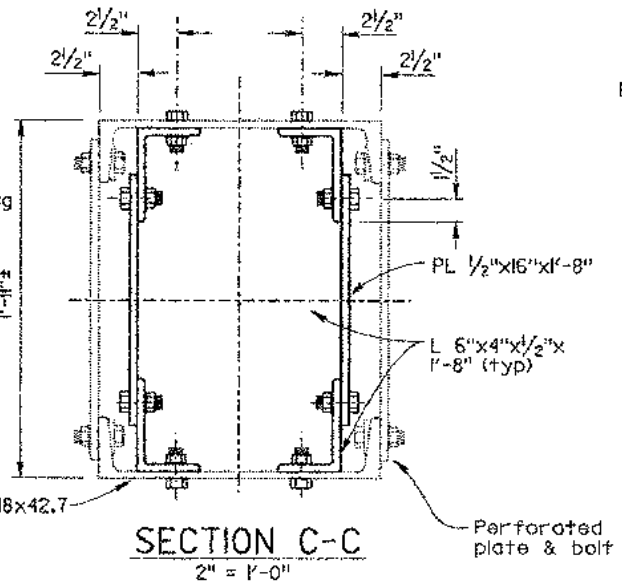
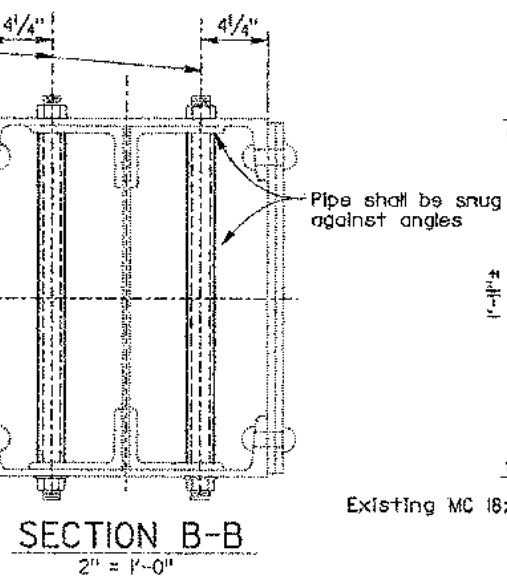
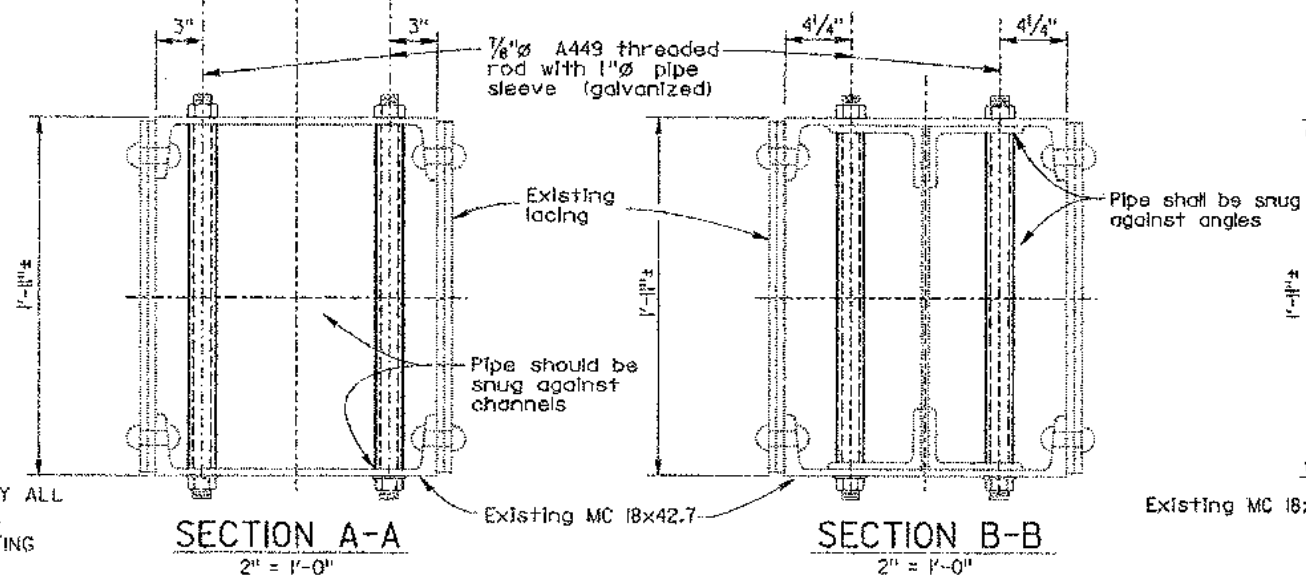
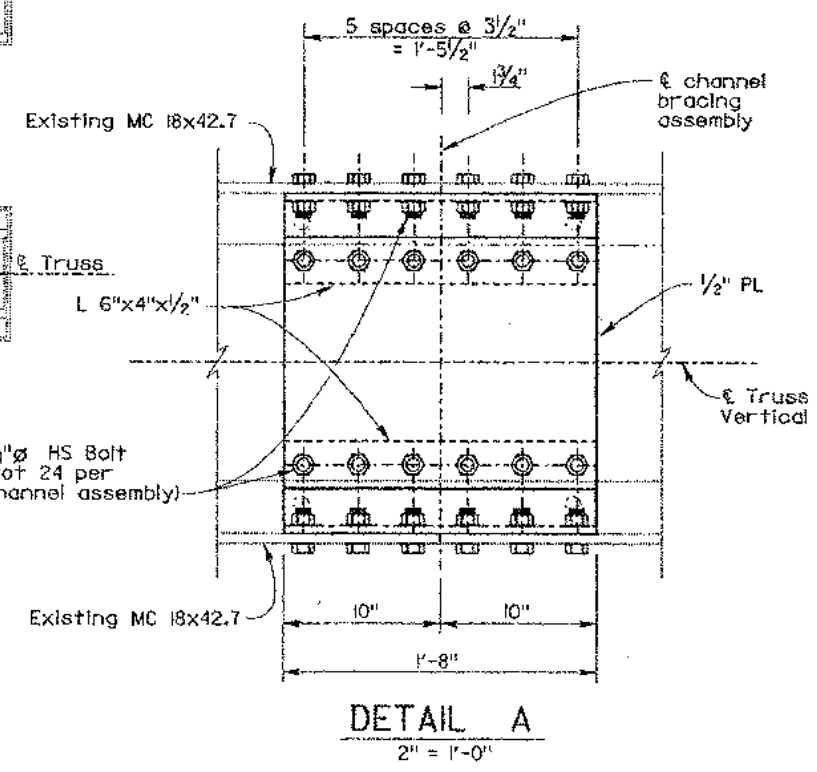
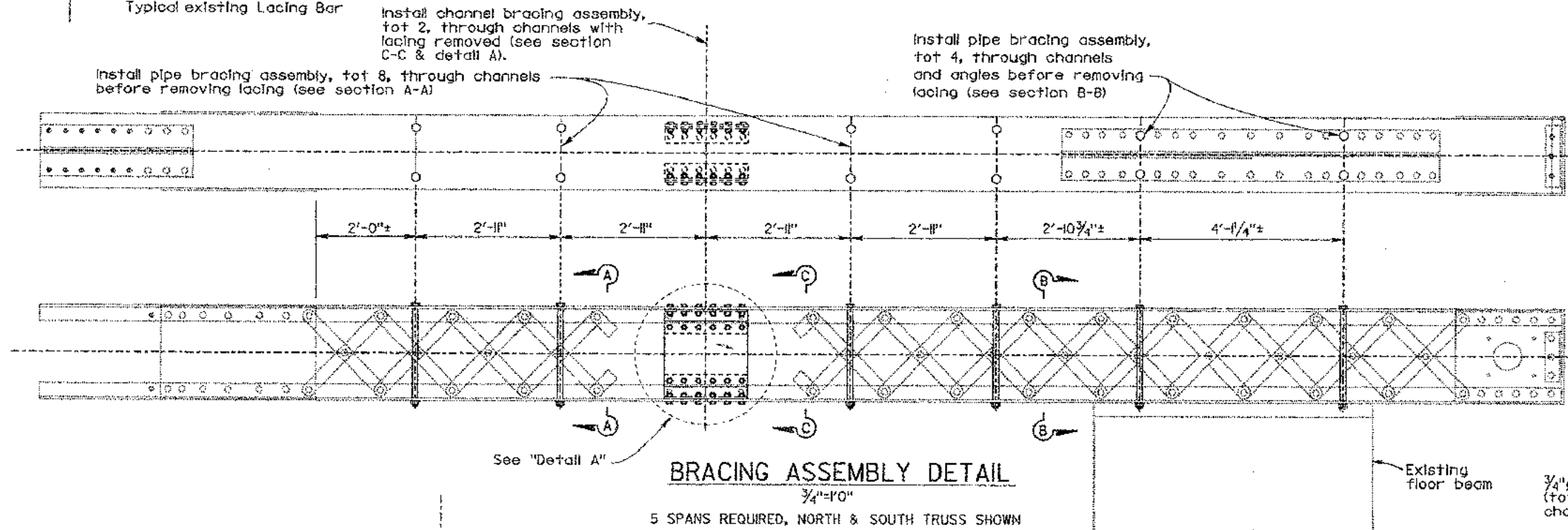
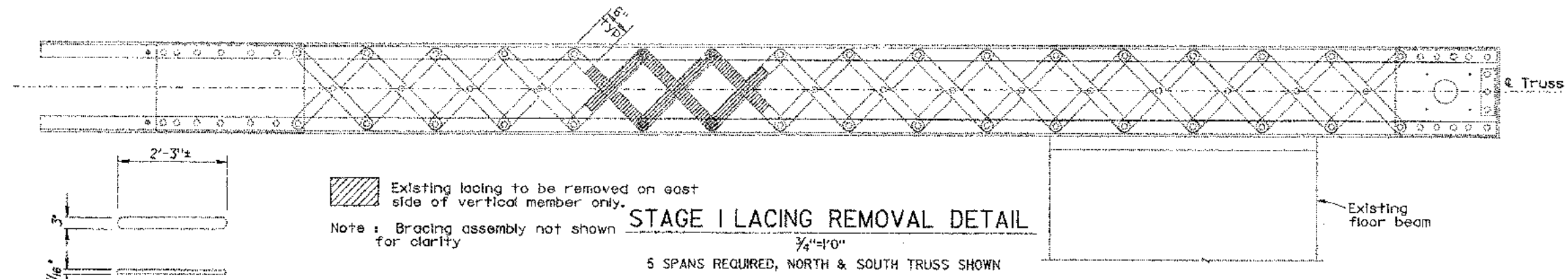
INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES  
SAN FRANCISCO OAKLAND BAY BRIDGE  
TRUSS VERTICAL DETAILS NO. 3

DISREGARD PRINTS BEARING EARLIER REVISION DATES  
USERNAME: trright  
date: 3.09080935

REVISION DATES (PRELIMINARY STAGE ONLY)  
SHEET 9 OF 29

DATE PLOTTED: 9-Dec-1997  
TIME PLOTTED: 08:53

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NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

INTERIM SEISMIC RETROFIT PROJECT  
 EAST BAY 504 TRUSSES  
 SAN FRANCISCO-OAKLAND BAY BRIDGE  
 TRUSS VERTICAL DETAILS NO. 4

DESIGN	BY M. Pope	CHECKED T. Sadek	STATE OF CALIFORNIA	DIVISION OF STRUCTURES	PROJECT NO. 33-0025
CHECKED	J. Casarino / K. D. Sadek	T. Sadek	DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN	POST HOLE
QUANTITIES	BY M. Pope	CHECKED C. Leung		TOLL BRIDGE SPECIAL ANALYSIS	115
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			CU 04	EA 04300	DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
12-8-97	10	29

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	133	205

*Stephen W. Mitchell*  
REGISTERED ENGINEER - CIVIL  
November 3, 1997

12-8-97  
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

SECTION A-A

HS bolts  
Perforated Plate  
Existing bracing assembly

SECTION B-B

1" HS Bolts  
Perforated Plate  
7/8" HS Bolts  
Splice plate

3 3/8" for span E6, 3 1/8" for others

1" = 1'-0"

2 1/2" 2 1/2" 3" 2 1/2" 3 1/4" 2 1/2" 3 1/4" 2 1/2" 3 1/4" 2 5/8" 2"

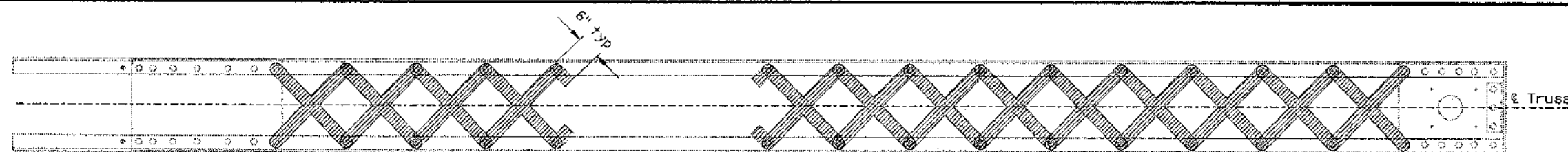
2'-11 1/2" for span E6, 2'-11 3/4" for others  
Splice plate length

DETAIL B

1/2" = 1'-0"

MARKING DIAGRAM

LO MI2



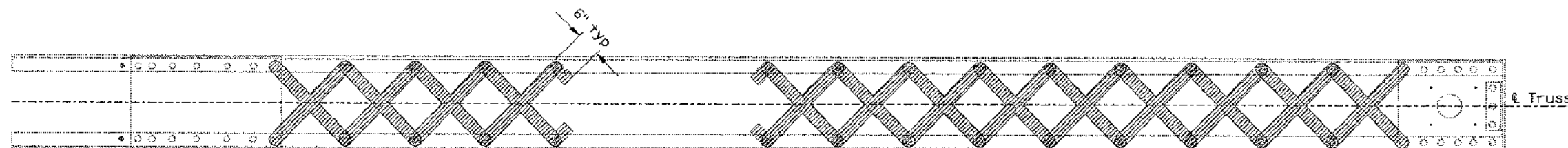
Existing lacing to be removed on east side of vertical member only

Note: Bracing assembly not shown for clarity

## STAGE 2 LACING REMOVAL DETAIL

3/4" = 1'-0"

5 SPANS REQUIRED, NORTH & SOUTH TRUSS SHOWN



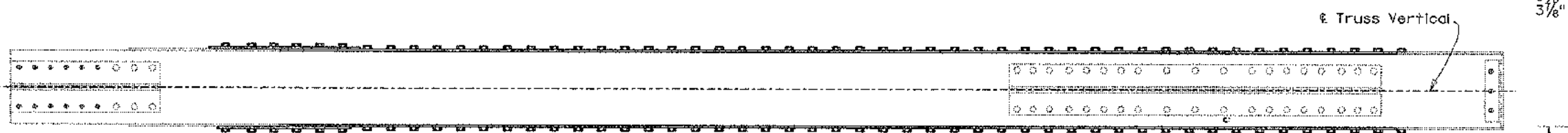
Existing lacing to be removed on west side of vertical member only

Note: Bracing assembly not shown for clarity

## STAGE 3 LACING REMOVAL DETAIL

3/4" = 1'-0"

5 SPANS REQUIRED, NORTH & SOUTH TRUSS SHOWN



Splice Plate:  
1/2"x22 1/2"x2'-11 1/2" for span E6  
1/2"x22 1/2"x2'-11 3/4" for others

3/4" HS Bolts in new hole tot 60 each plate

1" HS bolts total 8 each side

1" HS bolts total 4 each side

R=4 1/2" typ

7/8" HS bolts total 12 each side

1" HS Bolt in existing rivets hole

Perforated Plate 1/2"x22 3/4"

Edge of existing stay plate

22'-11 1/8" for (L0-M0) A6, (L12-M12) A6, (L0-M0) B6, (L12-M12) B6

22'-11 3/8" for others

## PERFORATED PLATE DETAIL

3/4" = 1'-0"

5 SPANS REQUIRED, NORTH & SOUTH TRUSS SHOWN

NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

### LEGEND

- ▲ - Replace existing rivets with high strength bolts
- - Install high strength bolts in new holes
- - Indicates existing rivets.

DESIGN	BY M. Pope	CHECKED T. Sadek
DETAILS	BY JFCasarin/Thad R. Spiller	CHECKED T. Sadek
QUANTITIES	BY M. Pope	CHECKED G. Leung

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
STRUCTURE DESIGN  
TOLL BRIDGE SPECIAL ANALYSIS

BRIDGE NO.  
33-0025  
POST MILE  
L15

INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES  
SAN FRANCISCO-OAKLAND BAY BRIDGE  
TRUSS VERTICAL DETAILS NO.5

DS OSD 239 (CADD 3/95)

ORIGINAL SCALE IN INCHES  
FOR REDUCED PLANS

CU 04  
EA 043001

DISREGARD PRINTS BEARING  
EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 11 OF 29

USERNAME => trbing  
dctva5\_09083547

DATE PLOTTED => 9-Dec-1997  
TIME PLOTTED => 09:19



DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	135	205

Stephen W. Mitchell

REGISTERED ENGINEER - CIVIL  
November 3, 1997

12-8-97

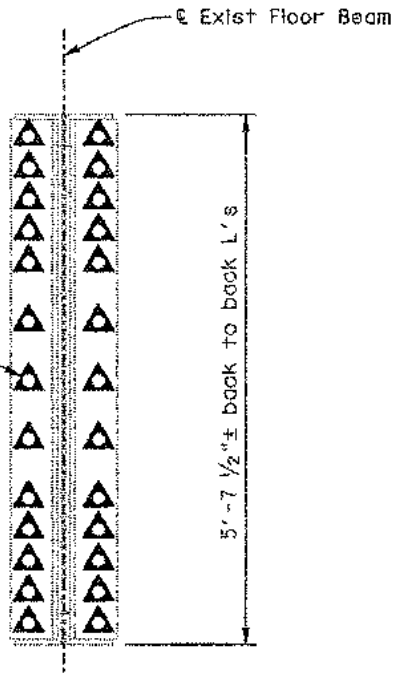
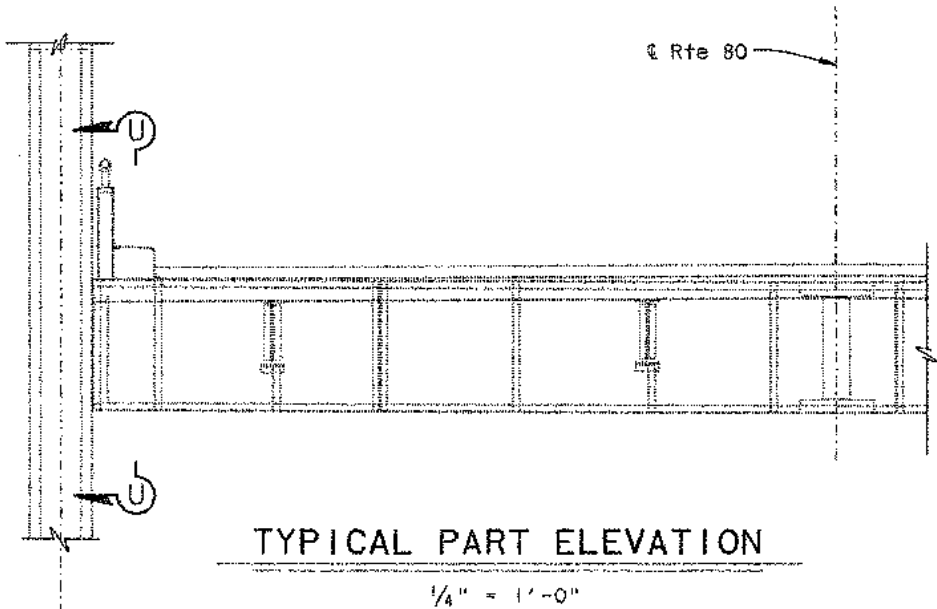
PLANS APPROVAL DATE

12-31-97

CIVIL

STATE OF CALIFORNIA

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SECTION U-U  
FLOOR BEAMS  
1" = 1'-0"

LOCATION	NUMBER OF RIVETS REMOVE AND REPLACE	DIA OF NEW A325 BOLTS
L0	52	1 1/8"
L1	52	1 1/8"
L2	52	1 1/8"
L3	52	1 1/8"
L4	52	1 1/8"
L5	52	1 1/8"
L6	52	1 1/8"
L7	52	1 1/8"
L8	52	1 1/8"
L9	52	1 1/8"
L10	52	1 1/8"
L11	52	1 1/8"
L12	52	1 1/8"

Notes:  
This table applies to Upper Floor Beams on all 504' Trusses.

1,560 Bolts @ Grip Length = 1.125"±  
780 Bolts @ Grip Length = 1.6875"±  
520 Bolts @ Grip Length = 1.5625"±  
520 Bolts @ Grip Length = 1.50"±

LEGEND

- ▲ -Replace existing rivets with high strength bolts
- -indicates existing rivets.

NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

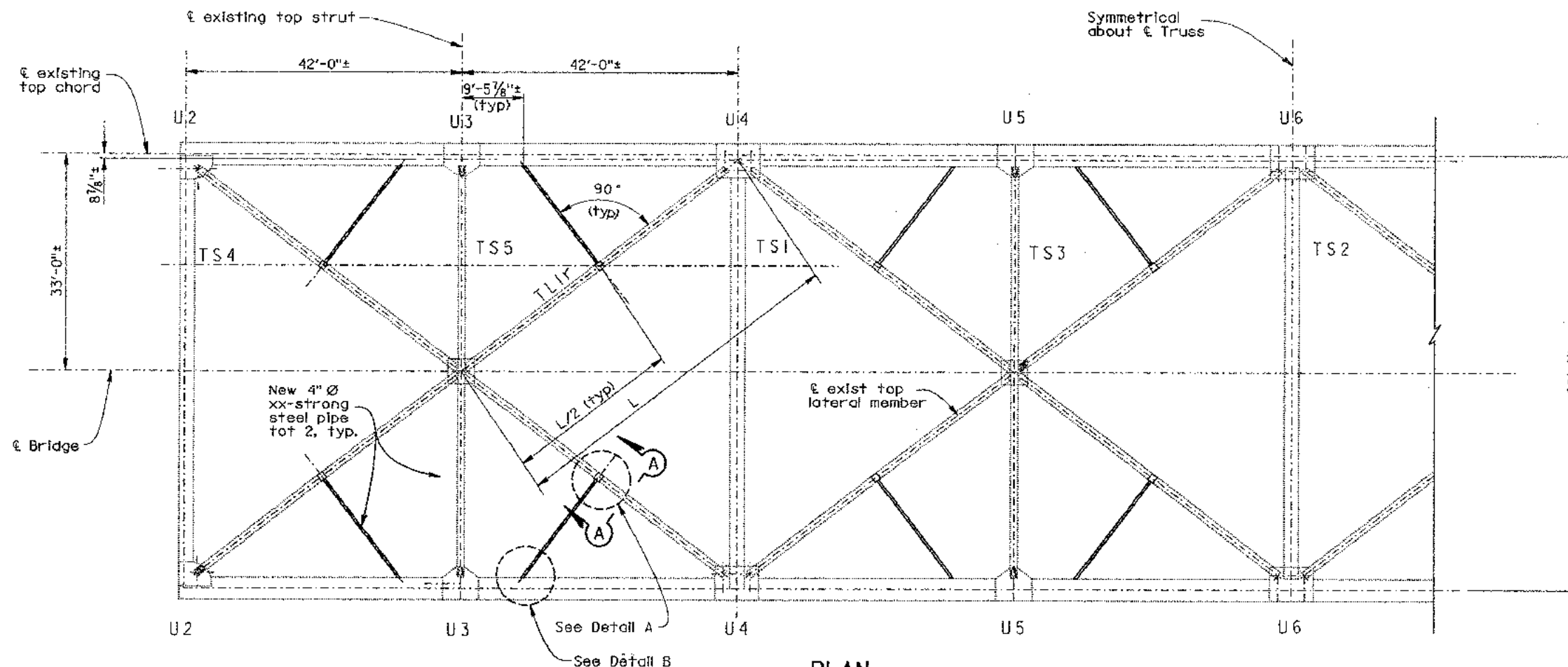
DESIGN BY T. SADEK 5-97 CHECKED S. MITCHELL 5-97				STATE OF CALIFORNIA		DIVISION OF STRUCTURES		BRIDGE NO. 33-0025		INTERIM SEISMIC RETROFIT PROJECT	
DETAILS BY D.A. SANDERSON 3-97 CHECKED T. SADEK 5-97				DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		POST MILE 1.15		EAST BAY 504 TRUSSES	
QUANTITIES BY T. SADEK 5-97 CHECKED S. MITCHELL 5-97						TOLL BRIDGE SPECIAL ANALYSIS				SAN FRANCISCO-OAKLAND BAY BRIDGE	
										UPPER FLOOR BEAM DETAILS	
DS 050 2939 (CADD 5/95)				ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU 04 EA 043001		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES (PRELIMINARY STAGE ONLY)	
										SHEET 13 OF 29	

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	136	205

Stephen W. Mitchell  
 REGISTERED ENGINEER - CIVIL  
 November 3, 1997  
 No. 38781  
 Exp. 12-31-97  
 CIVIL  
 STATE OF CALIFORNIA

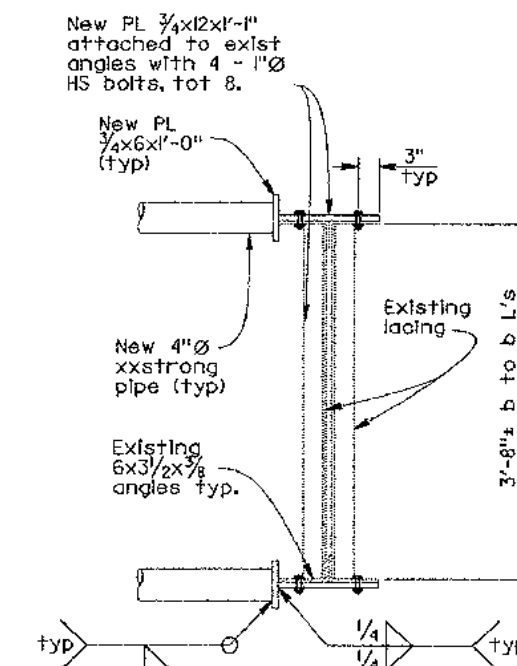
12-8-97  
PLANS APPROVAL DATE

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PLAN

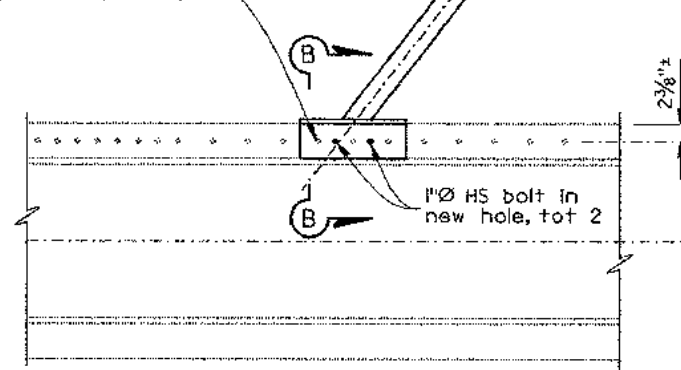
1" = 10'-0"



SECTION A-A

1" = 1'-0"

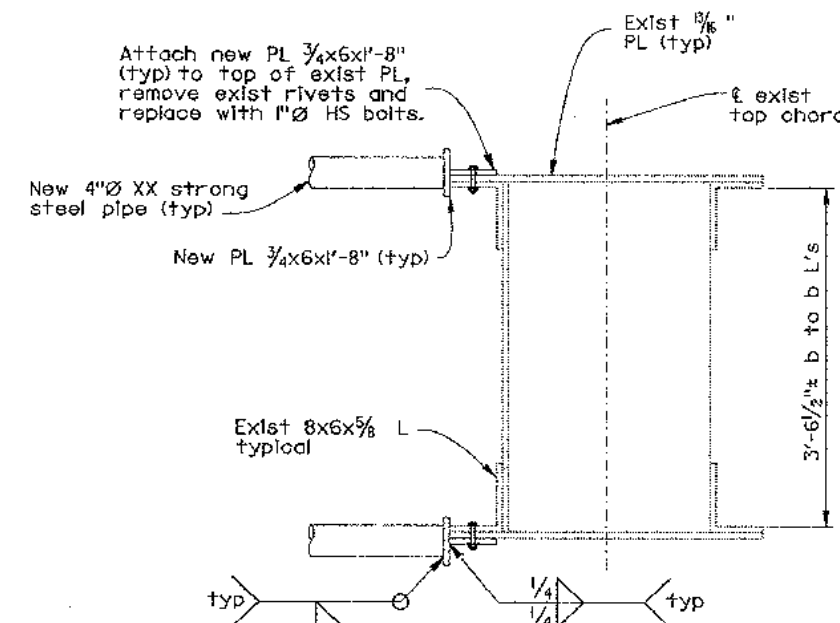
Replace existing rivets with 1"Ø HS bolts tot 3.



DETAIL B

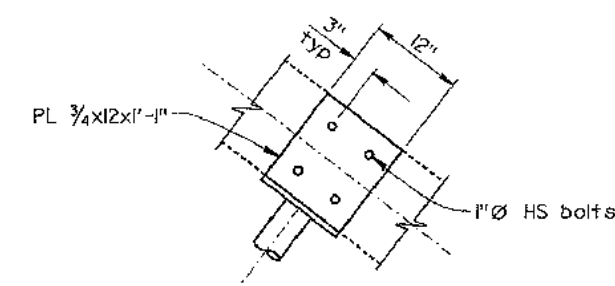
3/4" = 1'-0"

NOTE: New bolts to be A490 HS bolts.



SECTION B-B

1" = 1'-0"



DETAIL A

1" = 1'-0"

NOTE: THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DESIGN	BY T. Sadek	CHECKED S. Mitchell	DATE 5-97	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN TOLL BRIDGE SPECIAL ANALYSIS	BRIDGE NO.	33-0025	INTERIM SEISMIC RETROFIT PROJECT EAST BAY 504 TRUSSES SAN FRANCISCO-OAKLAND BAY BRIDGE TOP LATERAL BRACING DETAILS
DETAILS	BY JFCasarin	CHECKED T. Sadek				POST MILE	1.15	
QUANTITIES	BY T. Sadek	CHECKED S. Mitchell						

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS  
 0 1 2 3  
 CU 04  
 EA 043001  
 DISCARD PRINTS BEARING EARLIER REVISION DATES  
 USERNAME => trbmg  
 det:lb\_090836:5

DATE PLOTTED => 5-Dec-1997  
TIME PLOTTED => 09:21

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### LEGEND

- Indicates existing structures.
- ▲ Indicates existing rivets to be removed and replace with new 1"Ø A325 bolts
- Indicates approx. location of existing rivets

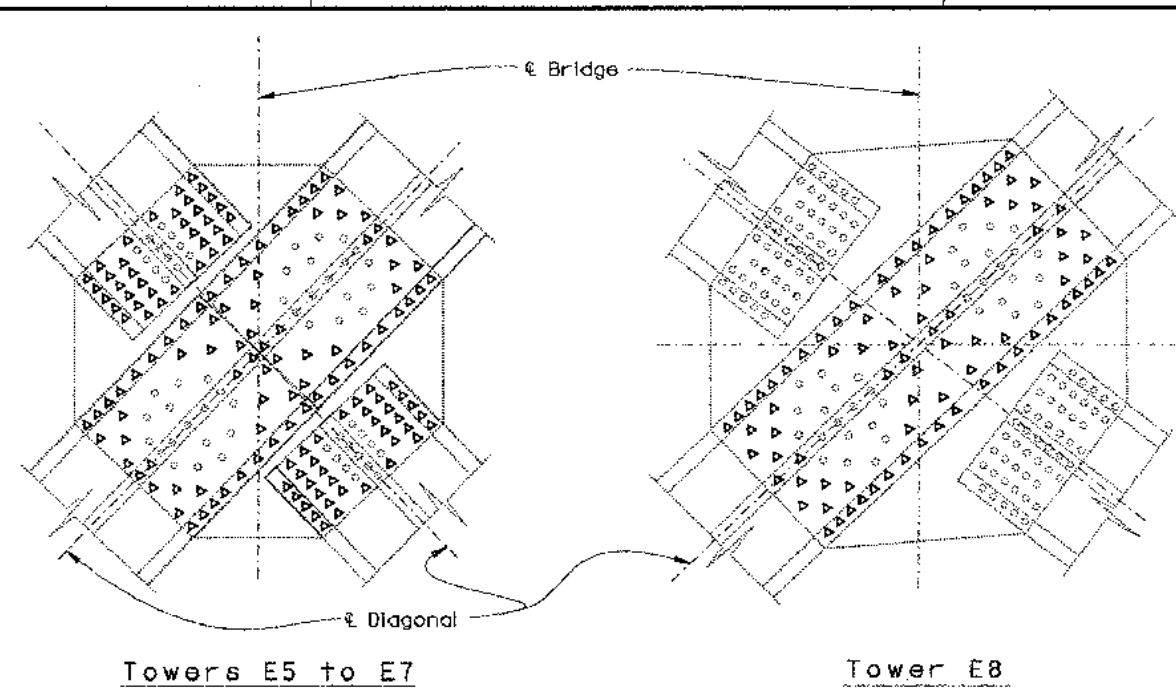
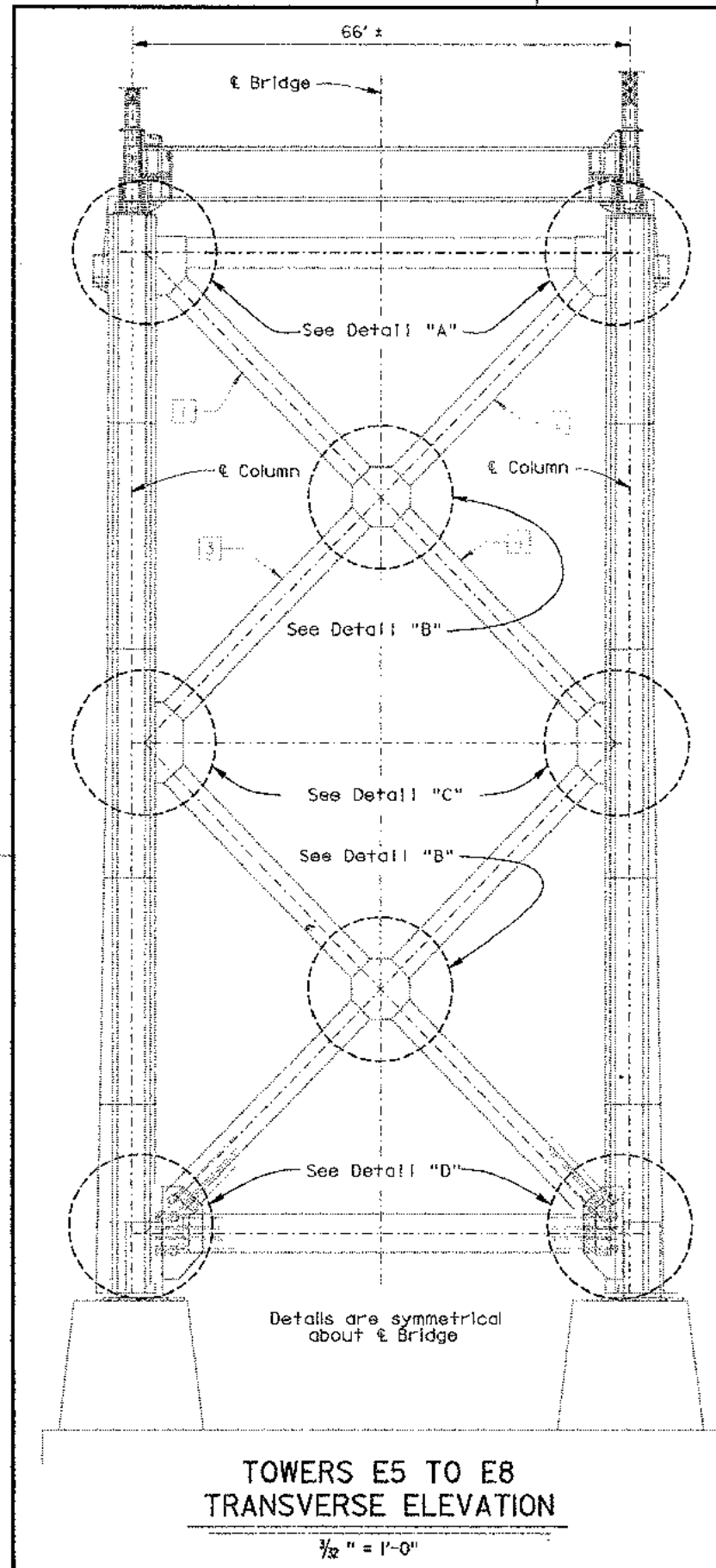
Note:  
Existing rivet sizes are 1"Ø & 7/8"Ø.  
Approx. total number of 7/8"Ø rivets replaced with 1"Ø HS Bolts for all towers = 2,224±

1,424 Bolts @ Grip Length = 1.0"±  
1,344 Bolts @ Grip Length = 1.25"±  
64 Bolts @ Grip Length = 1.375"±  
912 Bolts @ Grip Length = 1.50"±  
640 Bolts @ Grip Length = 1.75"±

DIAGONAL BRACE IDENTIFICATION		
LEGEND	LOCATION	MEMBER
1	Tower E5	B5F
	Tower E6	B6F
	Tower E7	B7G
	Tower E8	B8F
2	Tower E5	B5G
	Tower E6	B6G
	Tower E7	B7F
	Tower E8	B8G
3	Tower E5	B5B
	Tower E6	B6E
	Tower E7	B7A
	Tower E8	B8D
4	Tower E5	B5E
	Tower E6	B6C
	Tower E7	B7D
	Tower E8	B8C

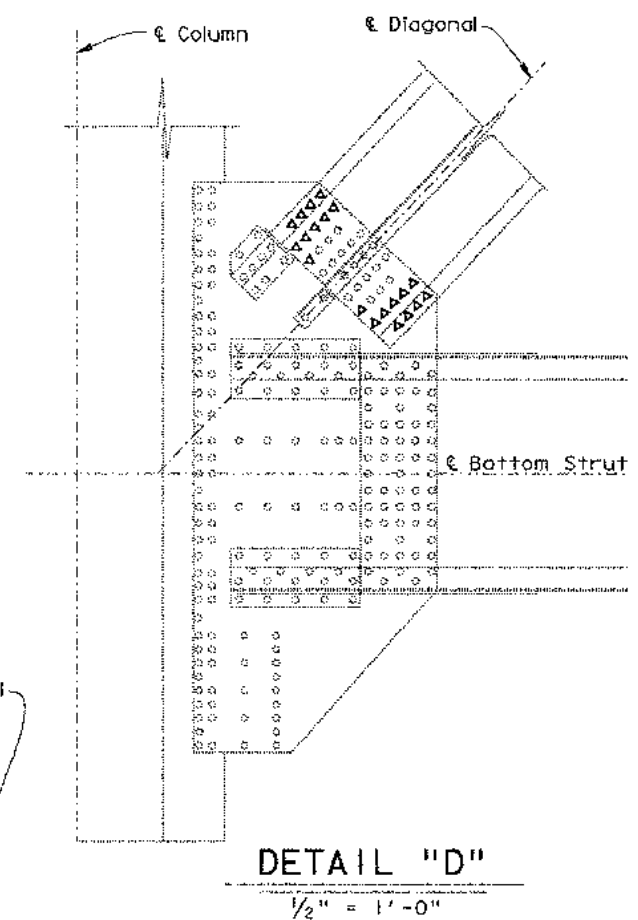
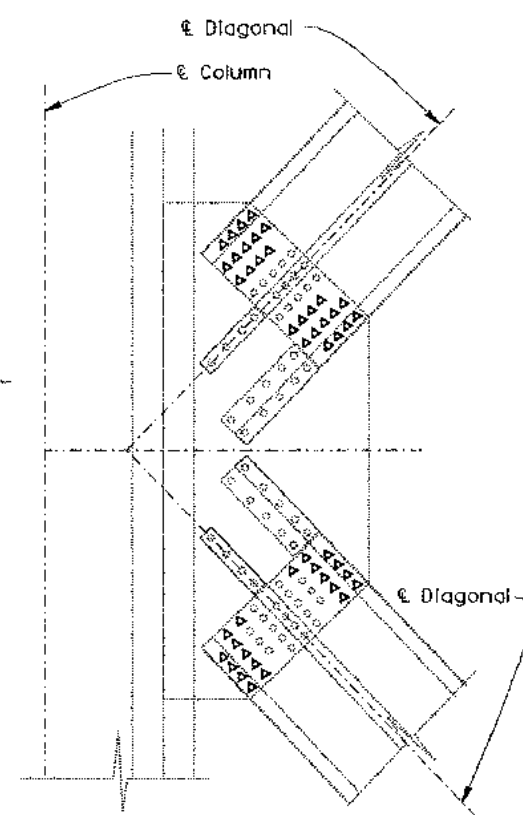
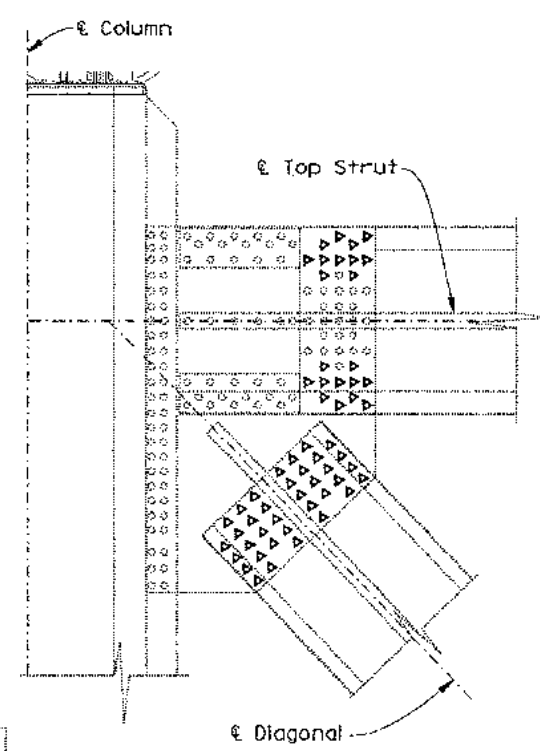
## INTERIM SEISMIC RETROFIT PROJECT EAST BAY 504 TRUSSES

## SAN FRANCISCO-OAKLAND BAY BRIDGE TOWERS E5 - E8 RIVET REPLACEMENT



### DETAIL "B"

1/2" = 1'-0"



NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

*Stephen W. Mitchell*  
REGISTERED ENGINEER - CIVIL  
November 3, 1997

12-8-97  
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
STEPHEN MITCHELL  
No. 3978  
Exp. 12-31-97  
CIVIL  
STATE OF CALIFORNIA

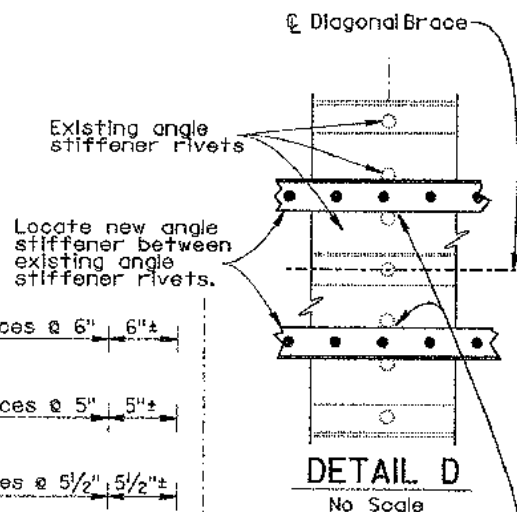
LEGEND:

- Indicates new 1"Ø High Strength bolt in new hole.

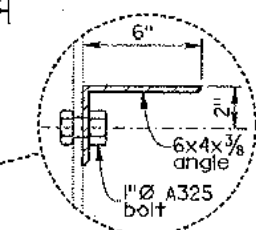
NOTES:

NOTES:  
See "Towers E5 - E8 Rivet  
Replacement" sheet for  
location of diagonal braces.

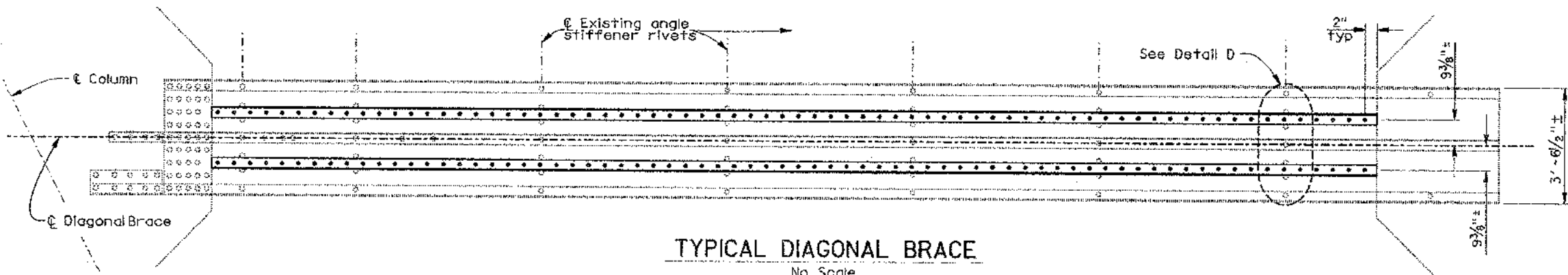
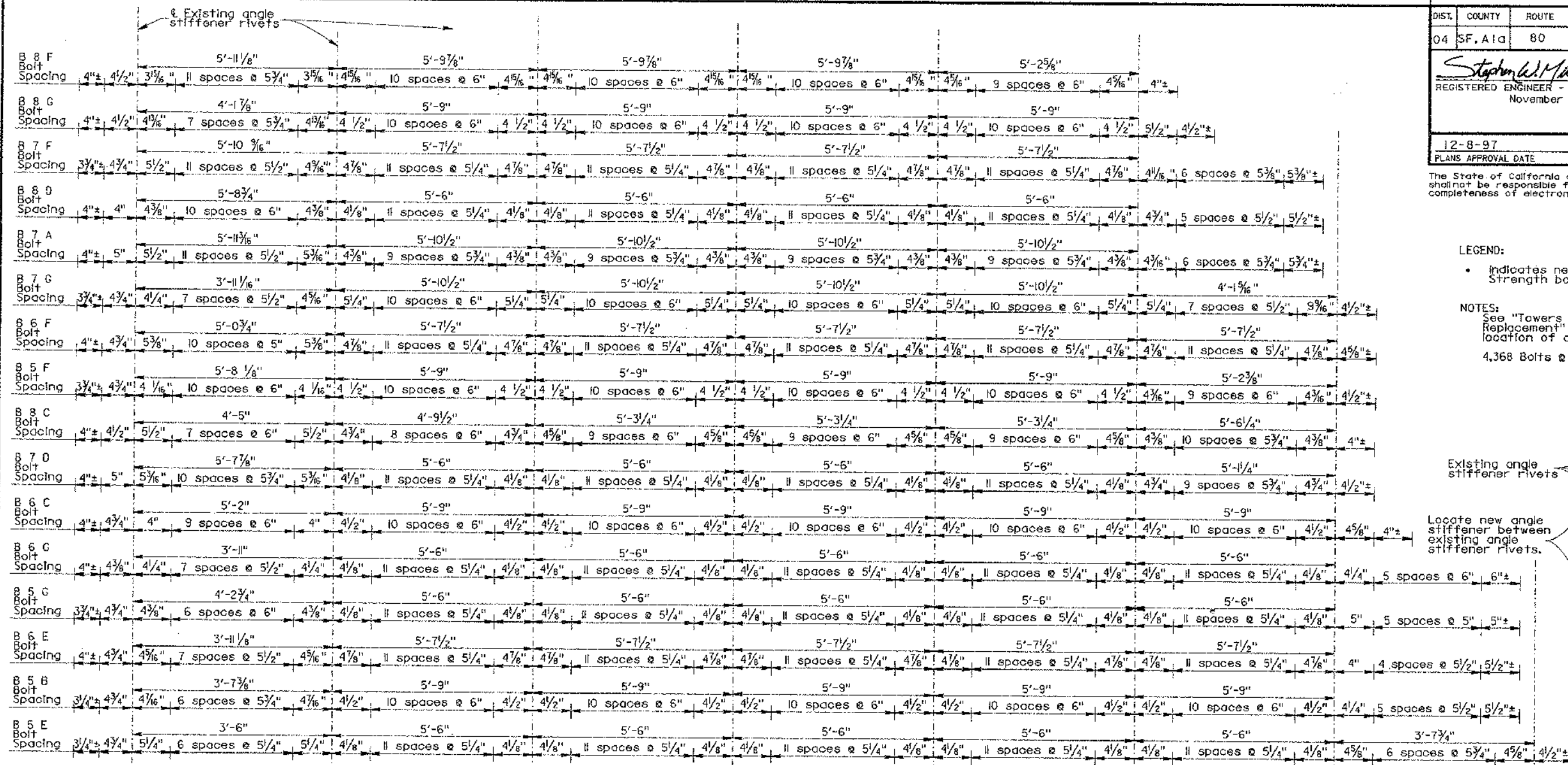
4,368 Bolts @ Grip Length = 0.875"±



Notch angle as  
necessary to -  
clear vertical  
angle rivets



NOTE:  
THE CONTRACTOR SHALL VERIFY ALL  
CONTROLLING FIELD DIMENSIONS  
BEFORE ORDERING OR FABRICATING  
ANY MATERIAL.



DESIGN	BY J. Morgan	CHECKED S. Mitchell
DETAILS	BY JFCarino	CHECKED J. Morgan
QUANTITIES	BY S. Mitchell	CHECKED J. Morgan

STATE OF  
**CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
**STRUCTURE DESIGN**  
TOLL BRIDGE SPECIAL ANALYSIS

BRIDGE NO.  
33-0025  
POST MILE  
1.15

INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES  
SAN FRANCISCO-OAKLAND BAY BRIDGE  
TOWERS E5 - E8 LONGITUDINAL STIFFENERS

DS 030 272 (0450 2/25)

ORIGINAL SCALE IN INCHES  
FOR REDUCED PLANS

CU 04  
FA 043001

DISREGARD PRINTS BEARING  
GAMER BENEFICIAL RATES

WIDER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

GUEST	OC
-------	----

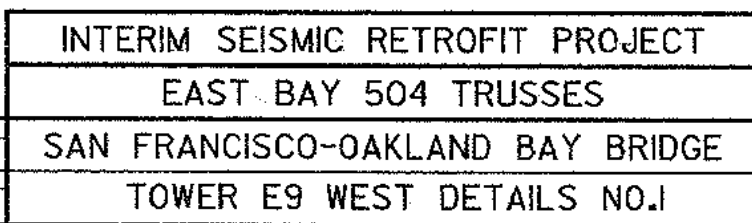
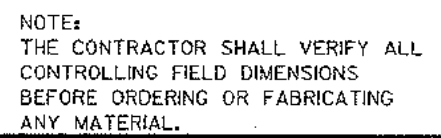
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USERNAME => tchong
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DATE PLOTTED => 9-Dec-1997  
TIME PLOTTED => 09:23

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

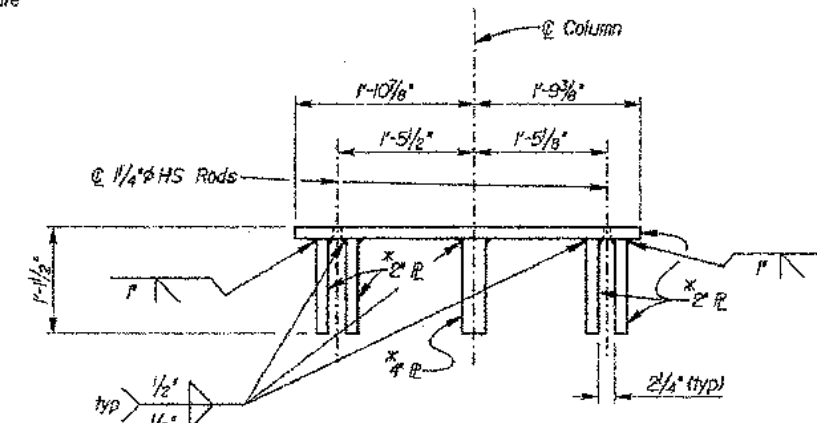
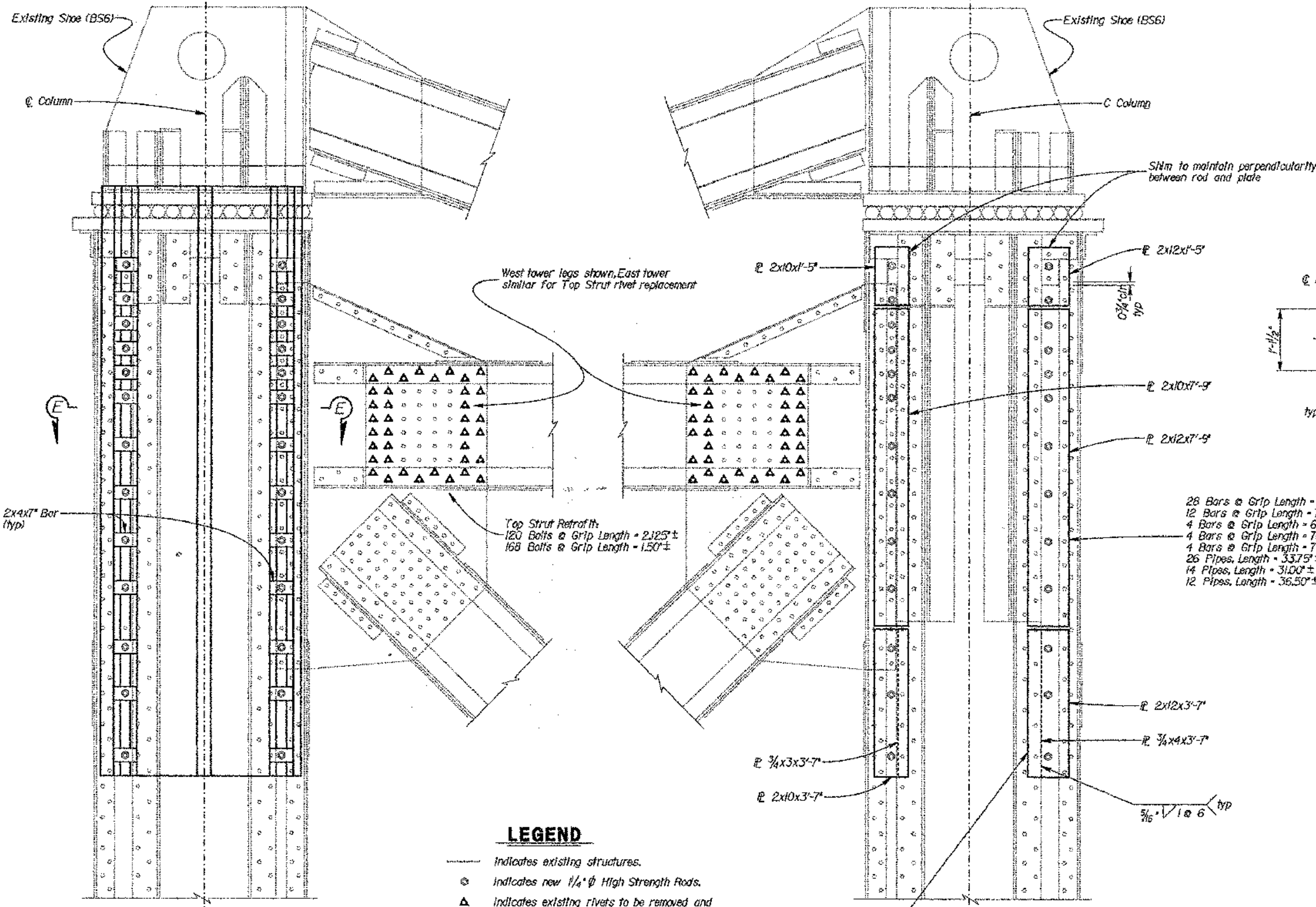


REVISION DATES (PRELIMINARY STAGE ONLY)										SHEET	OF
1	2	3	4	5	6	7	8	9	10	17	29

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	140	205

**Stephen W. Mitchell**  
 REGISTERED ENGINEER - CIVIL  
 November 3, 1997  
 12-8-97  
 PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



**SECTION E-E**

Note:  
x - (Fy = 50 ksi)

- 28 Bars @ Grip Length = 6125"±
- 12 Bars @ Grip Length = 7550"±
- 4 Bars @ Grip Length = 6603"±
- 4 Bars @ Grip Length = 7009"±
- 4 Bars @ Grip Length = 74125"±
- 26 Pipes, Length = 3375"±
- 14 Pipes, Length = 3100"±
- 12 Pipes, Length = 3650"±

**LEGEND**

- Indicates existing structures.
- ⊗ Indicates new 1/4" High Strength Rods.
- Δ Indicates existing rivets to be removed and replace with new F 4325 HS bolts.
- ⋄ Indicates approx. location of existing rivets

**VIEW B-B**  
3/4" = 1'-0"

**VIEW C-C**  
3/4" = 1'-0"

NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

**INTERIM SEISMIC RETROFIT PROJECT**  
**EAST BAY 504 TRUSSES**

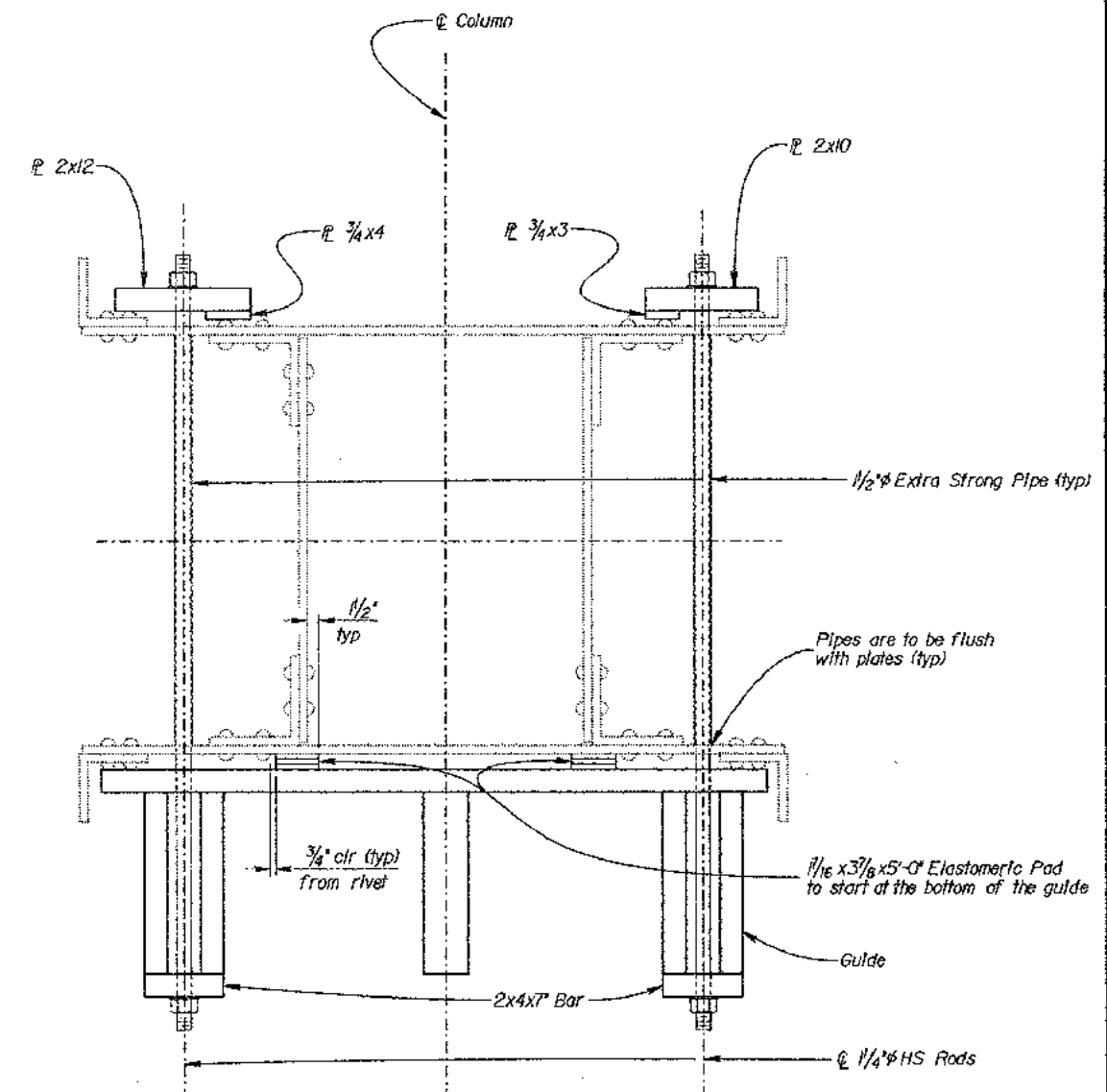
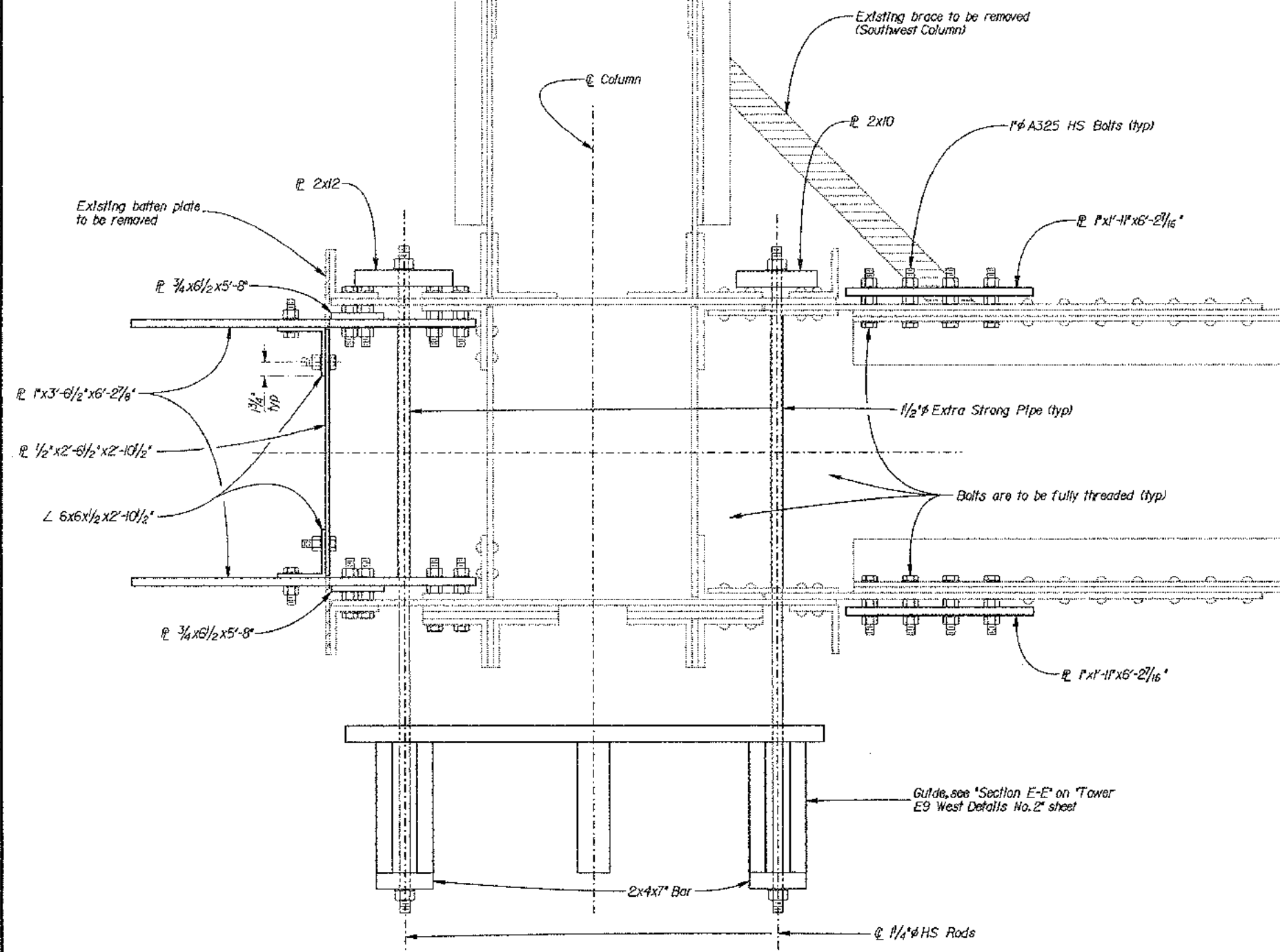
**SAN FRANCISCO-OAKLAND BAY BRIDGE**  
**TOWER E9 WEST DETAILS NO.2**

DESIGN	BY S. Mitchell	CHECKED J. Morgan	STATE OF CALIFORNIA	DIVISION OF STRUCTURES	BRIDGE NO. 33-0025
DETAILS	BY D. Pato	CHECKED S. Mitchell	DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN	POST MILE 1.15
QUANTITIES	BY S. Mitchell	CHECKED J. Morgan		TOLL BRIDGES SPECIAL ANALYSIS	

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	141	205

*Stephen W. Mitchell*  
 REGISTERED ENGINEER - CIVIL  
 November 3, 1997

12-8-97  
 PLANS APPROVAL DATE



NOTE:  
THE CONTRACTOR SHALL VERIFY ALL  
CONTROLLING FIELD DIMENSIONS  
BEFORE ORDERING OR FABRICATING  
ANY MATERIAL.

## LEGEND

INDICATES EXISTING STRUCTURES.

DESIGN	BY S. Mitchell	CHECKED J. Morgan
DETAILS	BY D. Pata	CHECKED S. Mitchell
QUANTITIES	BY S. Mitchell	CHECKED J. Morgan

STATE OF  
**CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

**DIVISION OF STRUCTURES  
STRUCTURE DESIGN**

BRIDGE NO.	33-0025
POST MILE	1.15

INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES  
SAN FRANCISCO-OAKLAND BAY BRIDGE  
TOWER E9 WEST DETAILS NO.3

DS CSD 239 (CAPD 9/95)

ORIGINAL SCALE IN INCHES  
FOR REDUCED PLANS

CU 04
EA 04300

DISREGARD PRINTS BEARING  
EARLIER REVISION DATES

	REVISION DATES (PRELIMINARY STAGE ONLY)
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Sheet	of
19	29

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USERNAME => trrichf
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DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alq	80	7.8/8.9, 0.0/1.1	142	205

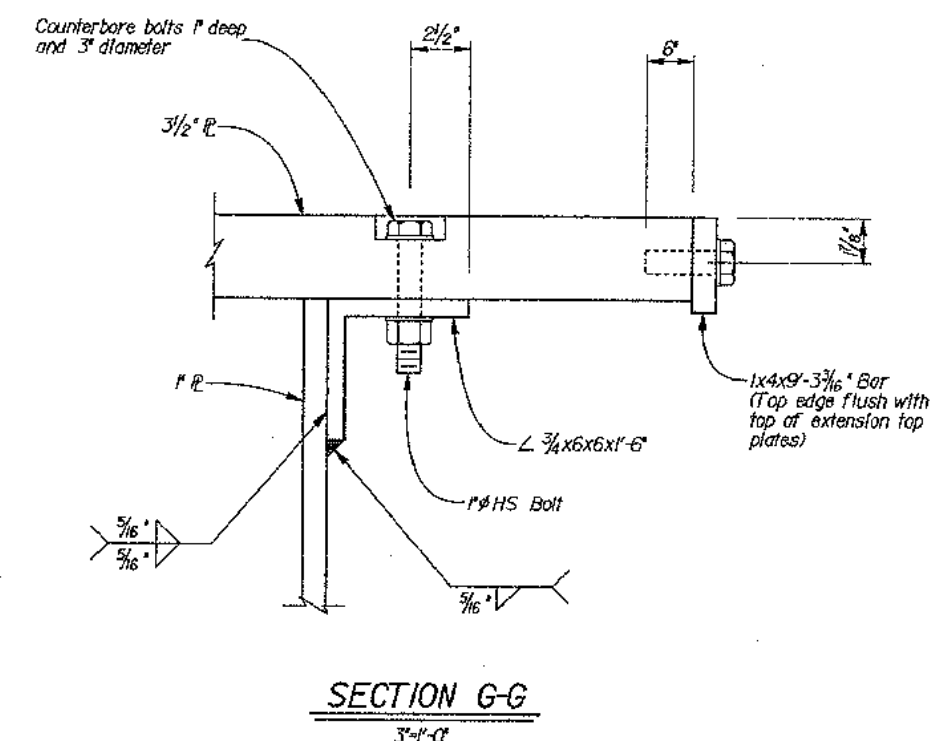
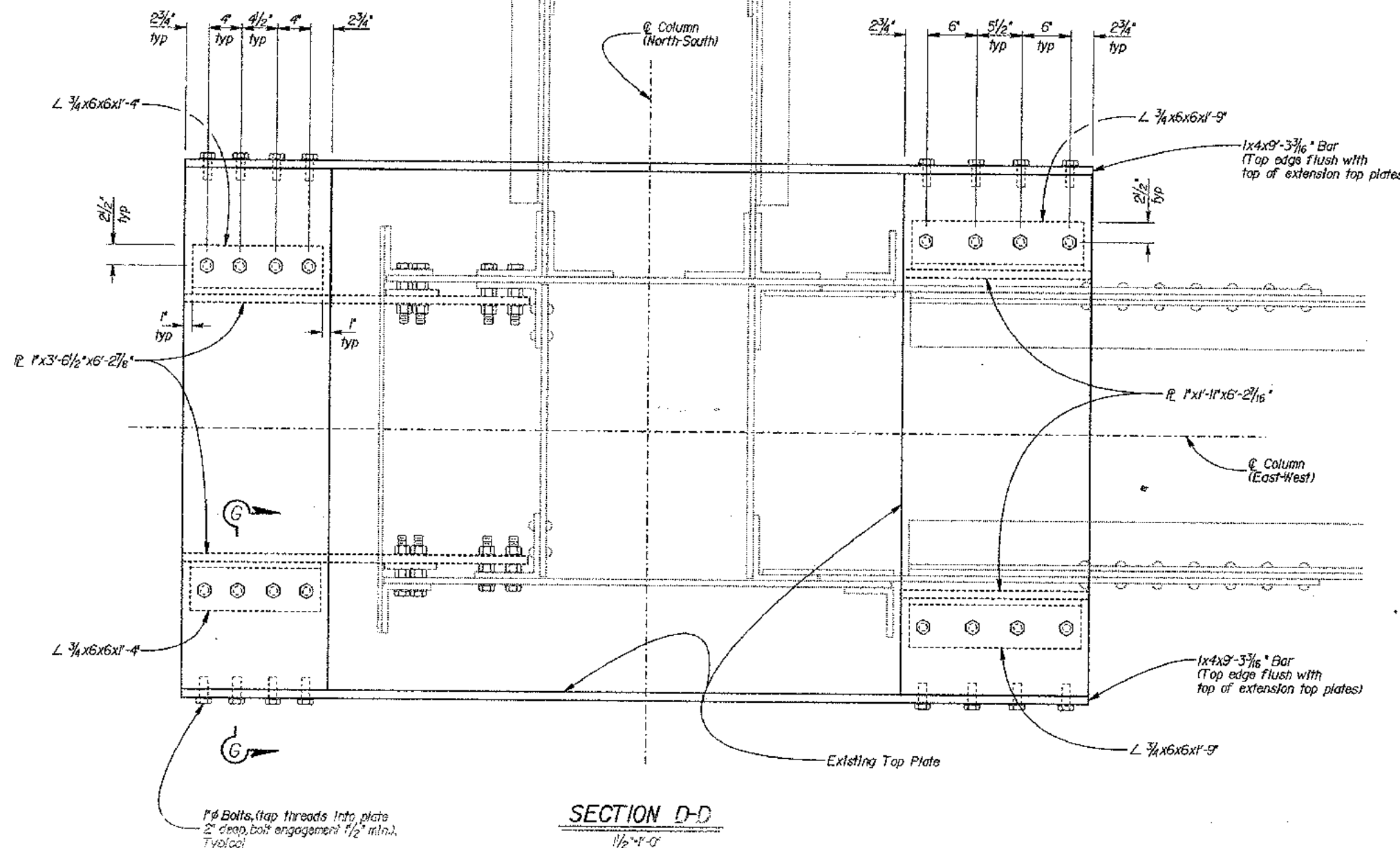
*Stephen W. Mitchell*  
REGISTERED ENGINEER - CIVIL  
November 3, 1997



12-8-97

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



NOTE:  
THE CONTRACTOR SHALL VERIFY ALL  
CONTROLLING FIELD DIMENSIONS  
BEFORE ORDERING OR FABRICATING  
ANY MATERIAL.

# LEGEND

Indicates existing structures.

DESIGN	BY S. Mitchell	CHECKED J. Morgan
DETAILS	BY D. Pata	CHECKED S. Mitchell
QUANTITIES	BY S. Mitchell	CHECKED J. Morgan

STATE OF  
CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
STRUCTURE DESIGN  
TOLL BRIDGES SPECIAL ANALYSIS

BRIDGE NO.  
33-0025  
POST MILE  
1.15

INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES  
SAN FRANCISCO-OAKLAND BAY BRIDGE  
TOWER E9 WEST DETAILS NO.4

DS 050 2/88 (CADD 1/95)

ORIGINAL SCALE IN INCHES  
FOR REDUCED PLANS

CU 04  
EA 043001

DISREGARD PRINTS BEARING  
EARLIER REVISION DATES

REVISION DATES (DISCUSS STAFF OR IT)

SHEET  
20 OF  
29

USERNAME: tricht  
C:\WORK\0408154

DATE PLOTTED: 9-06-1997  
TIME PLOTTED: 08:09

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, A10	80	7.8/8.9, 0.0/1.1	143	205

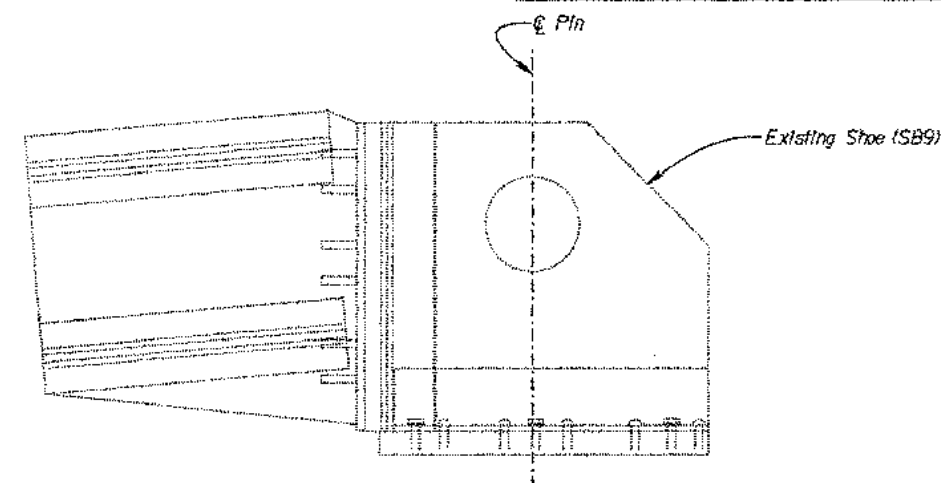
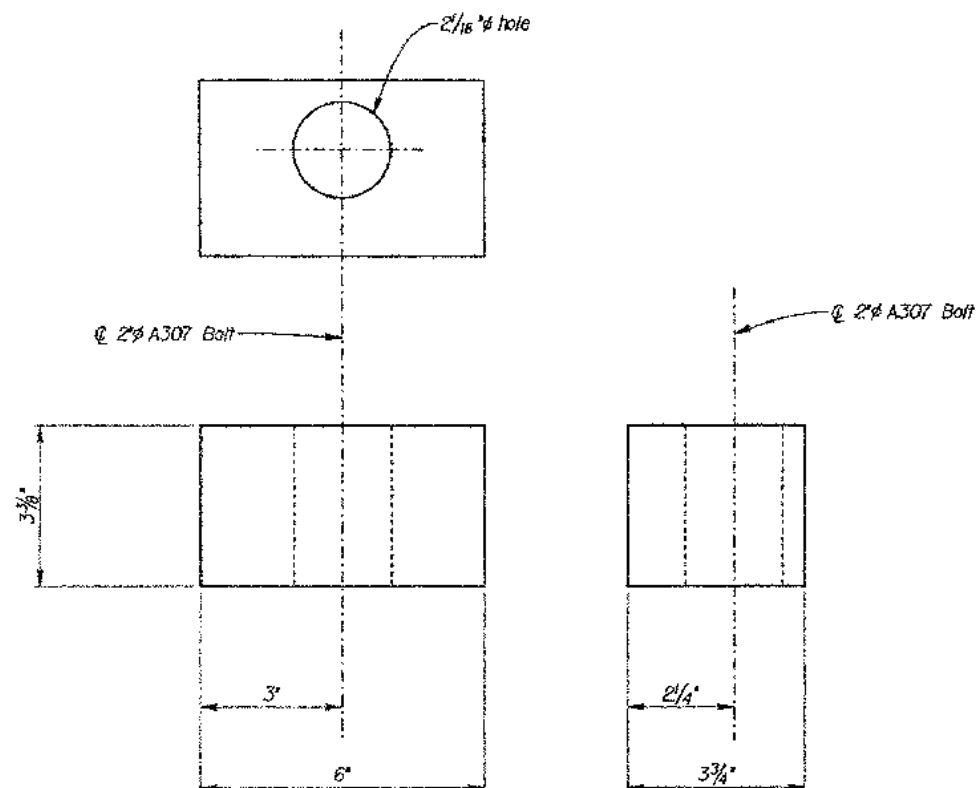
*Stephen W. Mitchell*  
REGISTERED ENGINEER - CIVIL  
November 3, 1997



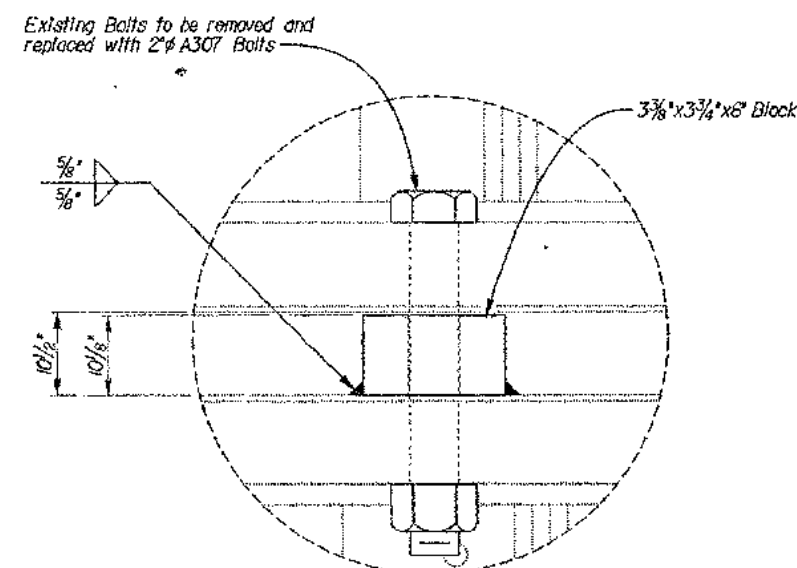
12-6-97

PLANS APPROVAL DATE

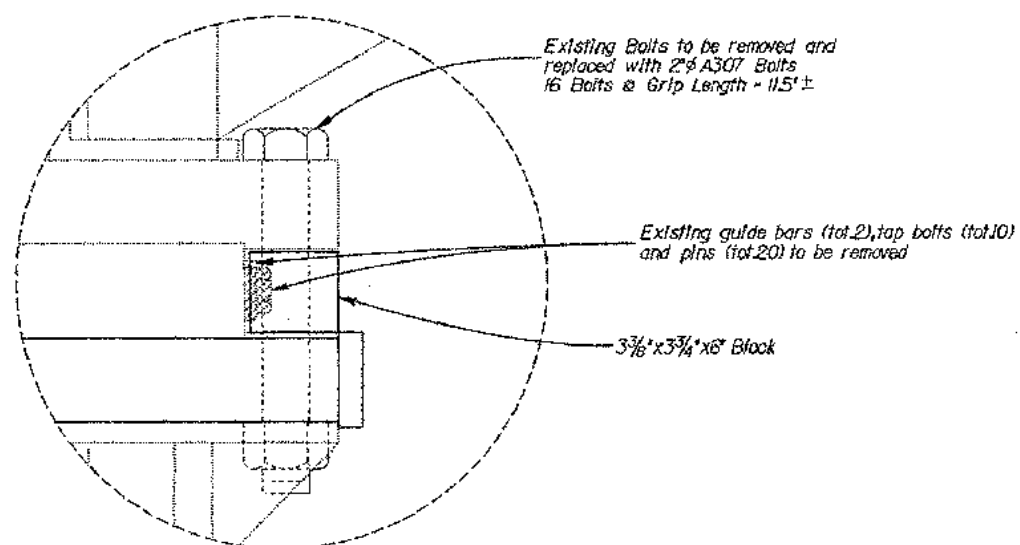
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



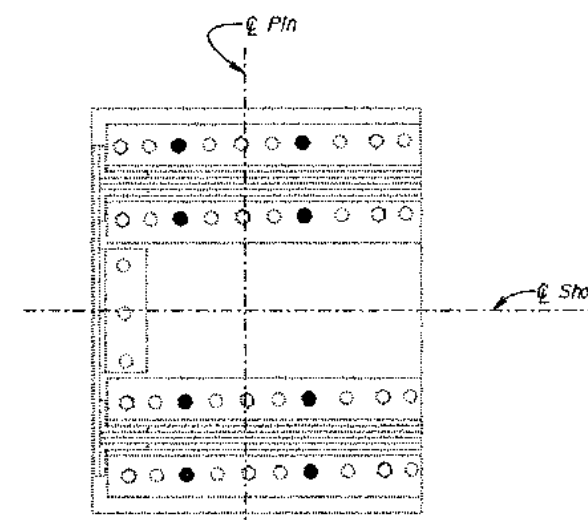
### ELEVATION



DETAIL B  
3" x 1'-0"



DETAIL A  
3'-8'-0"



PLAN

EAST SIDE SHOE (SB9)

NOTE:  
THE CONTRACTOR SHALL VERIFY ALL  
CONTROLLING FIELD DIMENSIONS  
BEFORE ORDERING OR FABRICATING  
ANY MATERIAL.

## LEGEND

*Indicates existing structures.*

● Indicates existing bolts to be removed.

DESIGN	BY S. Mitchell	CHECKED J. Morgan
DETAILS	BY D. Pato	CHECKED S. Mitchell
QUANTITIES	BY S. Mitchell	CHECKED J. Morgan

STATE OF  
**CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

# DIVISION OF STRUCTURES STRUCTURE DESIGN

BRIDGE NO.	33-0025
POST MILE	1.15

INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES  
SAN FRANCISCO-OAKLAND BAY BRIDGE  
TOWER E9 MISCELLANEOUS DETAILS

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)								SHEET #	OF
	5-9-67	5-24-67	6-2-67	6-20-67	6-27-67	7-26-67	8-23-67		2	29

05 05D 2139 1CA0D 2/853

ORIGINAL SCALE IN INCHES  
FOR REDUCED PLANS

CU 04
EA 043001

DISREGARD PRINTS BEARING  
EARLIER REVISION DATES -

REVISOR 04765 42261405487 SYDSE ONLY

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USERNAME => trichf  
dmisc 09081710
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DATE PLOTTED -> 9-DEC-1997

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	144	205

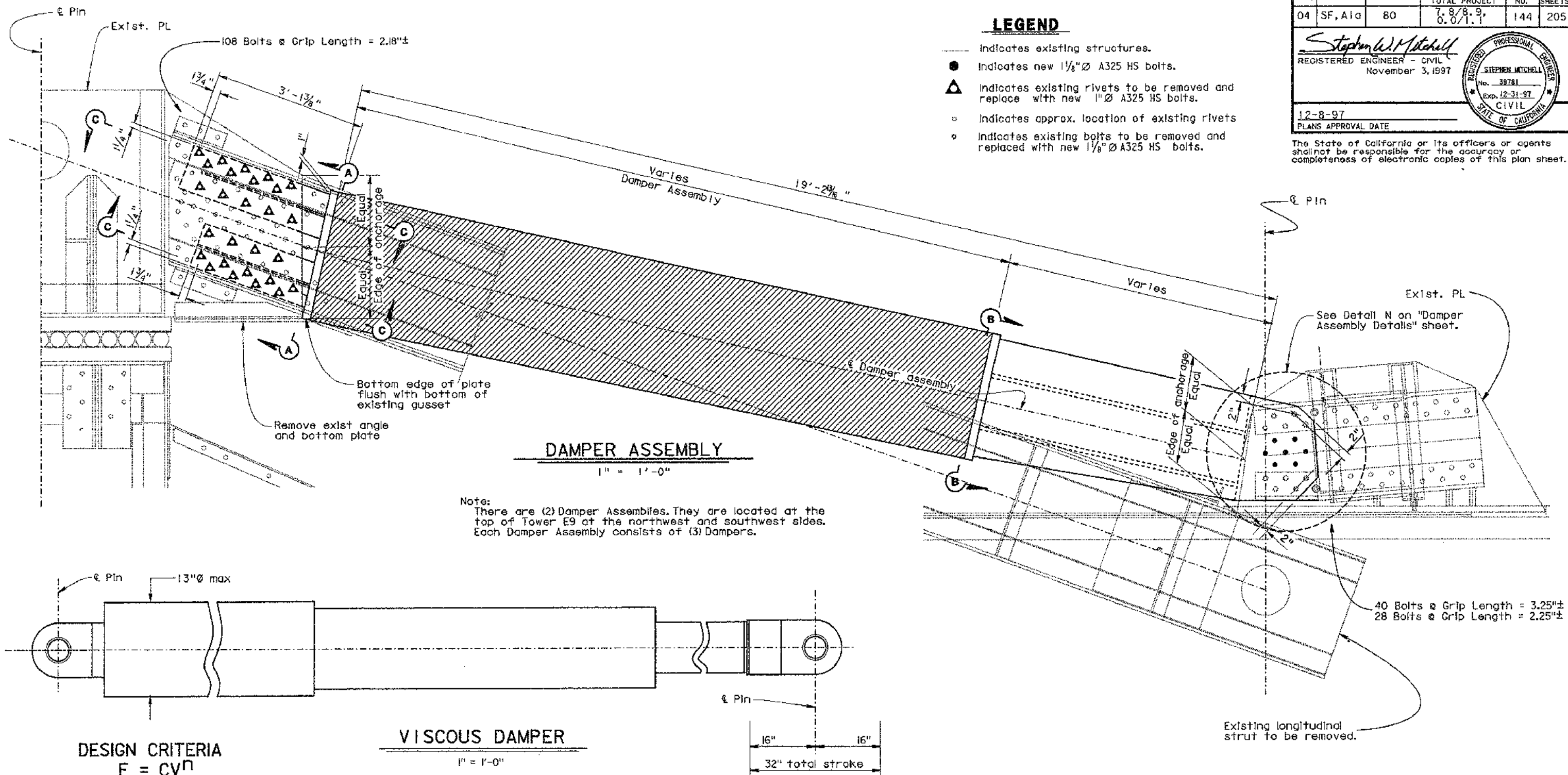
*Stephen W. Mitchell*  
REGISTERED ENGINEER - CIVIL  
November 3, 1997

12-8-97  
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS  
SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR  
COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

### LEGEND

- Indicates existing structures.
- Indicates new 1 1/8" Ø A325 HS bolts.
- ▲ Indicates existing rivets to be removed and replace with new 1" Ø A325 HS bolts.
- Indicates approx. location of existing rivets
- ✱ Indicates existing bolts to be removed and replaced with new 1 1/8" Ø A325 HS bolts.



Note:  
There are (2) Damper Assemblies. They are located at the top of Tower E9 at the northwest and southwest sides. Each Damper Assembly consists of (3) Dampers.

1. F is the designated force = 300 kips/damper  
Total force requires (6) 300 kips dampers (3) on the North and (3) on the South.
2. C is the damping coefficient = 8300 lb-sec/in
3. V is the design velocity = 24 in/sec
4. n is the velocity component = 1.0
5. Temperature operating range 20F min to 100F max
6. Stroke = ±16 in

NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES  
SAN FRANCISCO-OAKLAND BAY BRIDGE  
DAMPER ASSEMBLY

DESIGN	BY S. Mitchell	CHECKED J. Morgan	STATE OF CALIFORNIA	DIVISION OF STRUCTURES	BRIDGE NO. 33-0025
DETAILS	BY S. Mitchell	CHECKED S. Mitchell	DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN	POST MILE 1.15
QUANTITIES	BY S. Mitchell	CHECKED J. Morgan		TOLL BRIDGE SPECIAL ANALYSIS	

CU 04	EA 043001	REVISION DATES (INCLAMANT STAGE ONLY)	SHEET 22	OF 29
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DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9 0.0/1.1	145	205

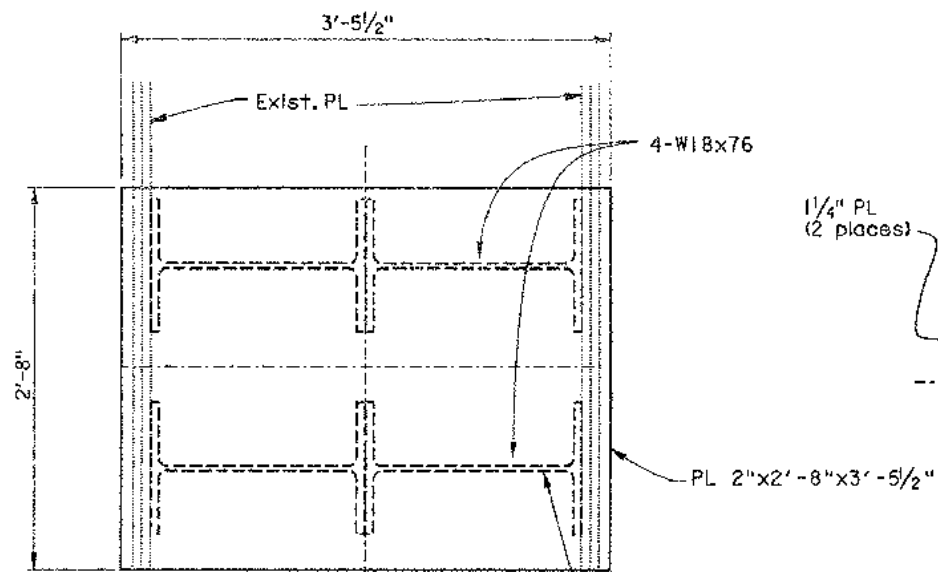
**Stephen W. Mitchell**  
REGISTERED ENGINEER - CIVIL  
November 3, 1997

12-8-97  
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

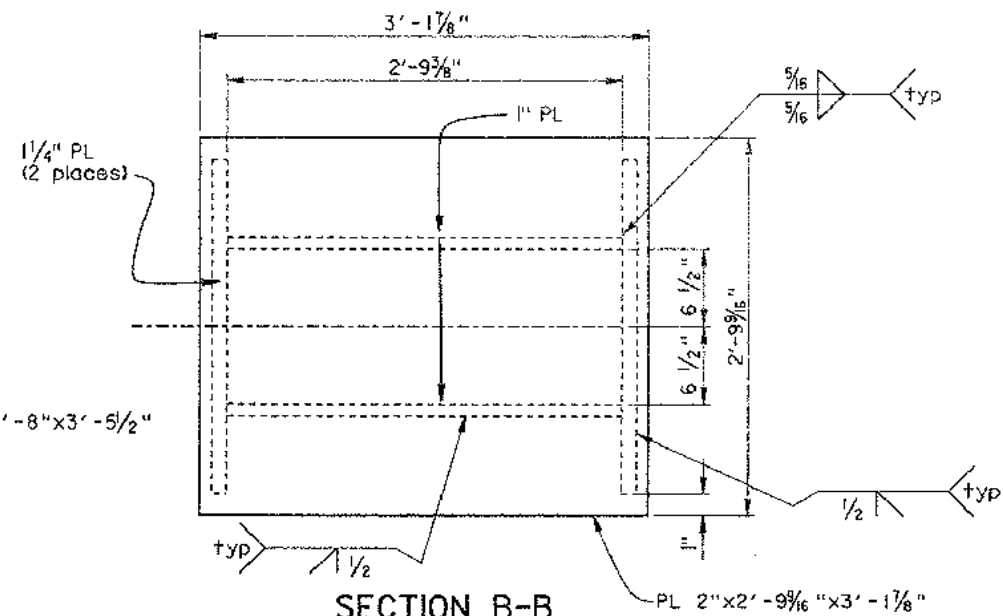
### LEGEND

- Indicates existing structures.
- Indicates new 1/8"Ø A325 HS bolts.
- Indicates approx. location of existing rivets.
- \* Indicates existing bolts to be removed and replaced with new 1/8"Ø A325 HS bolts.



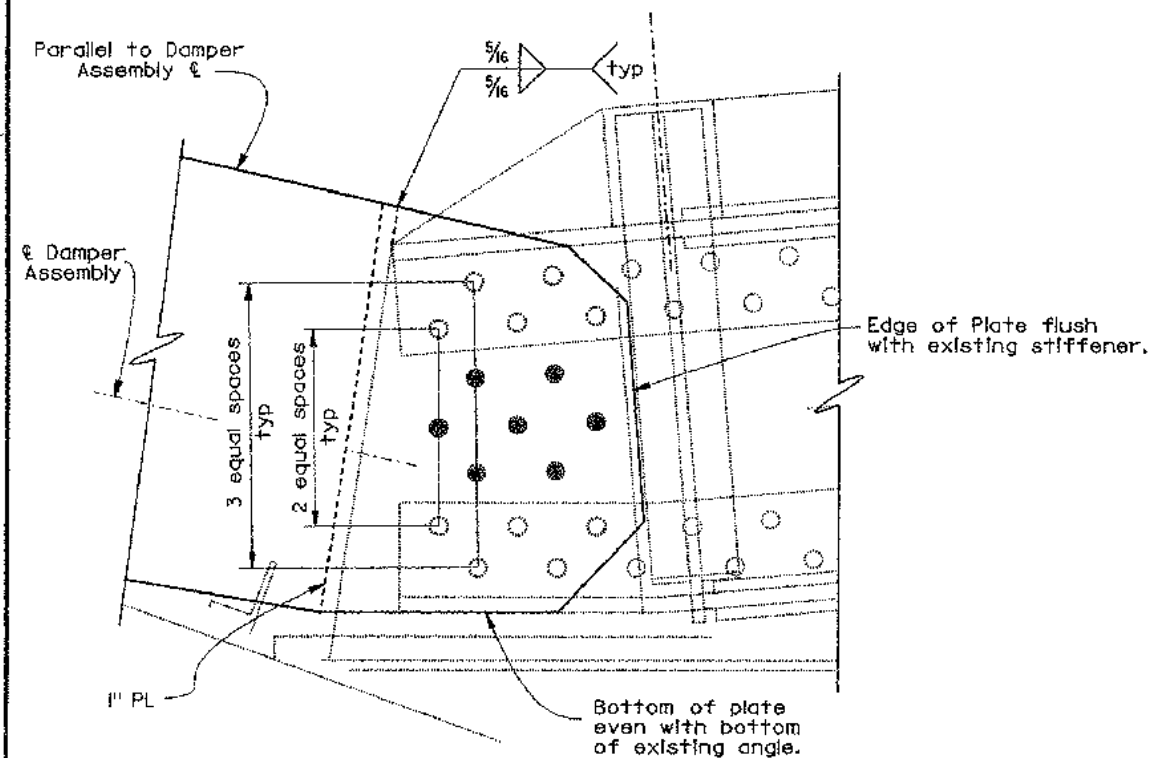
**SECTION A-A**

1/2" = 1'-0"



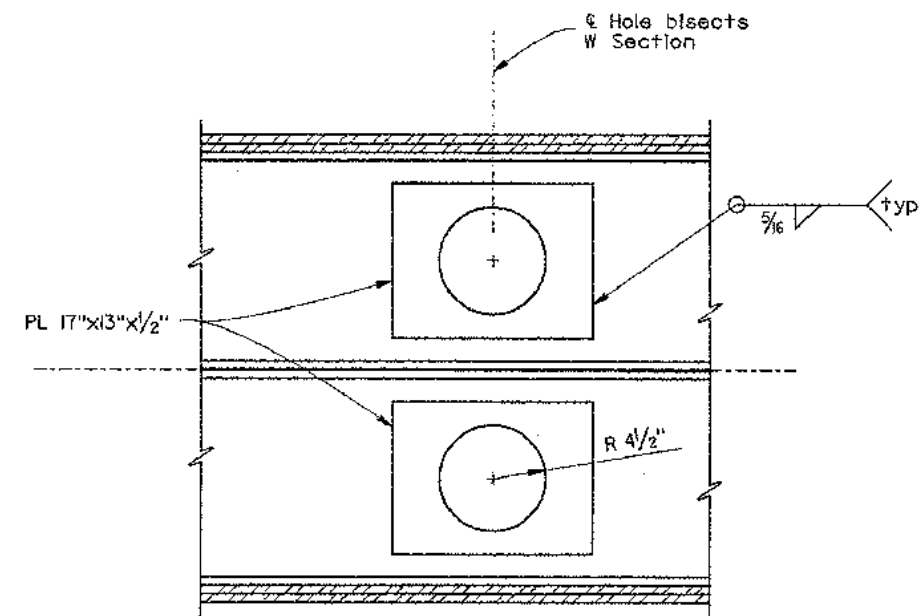
**SECTION B-B**

1/2" = 1'-0"



**DETAIL N**

2" = 1'-0"



**SECTION C-C**

1/2" = 1'-0"

- NOTES:
1. An Equivalent partial penetration weld may be substituted where access limits fillet welding.
  2. Where welds are not shown between parts, fillet weld the juncture.

NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

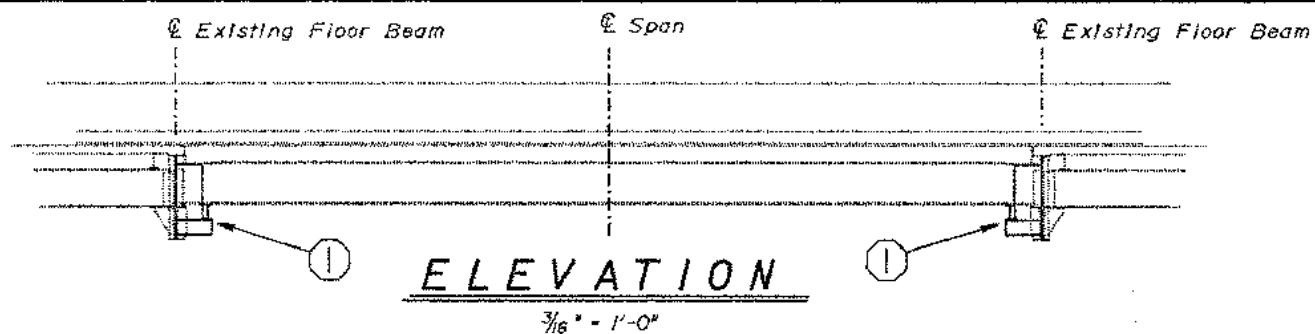
DESIGN	BY S. Mitchell	CHECKED J. Morgan
DETAILS	BY JFCosentino	5-97 CHECKED S. Mitchell
QUANTITIES	BY S. Mitchell	CHECKED J. Morgan

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
STRUCTURE DESIGN  
TOLL BRIDGE SPECIAL ANALYSIS

BRIDGE NO.	33-0025
POST MILE	1.15

INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES  
SAN FRANCISCO-OAKLAND BAY BRIDGE  
DAMPER ASSEMBLY DETAILS



# LEGEND

- Indicates Existing Structure
- Indicates New Construction
- ① Indicates Install Seat Extender.

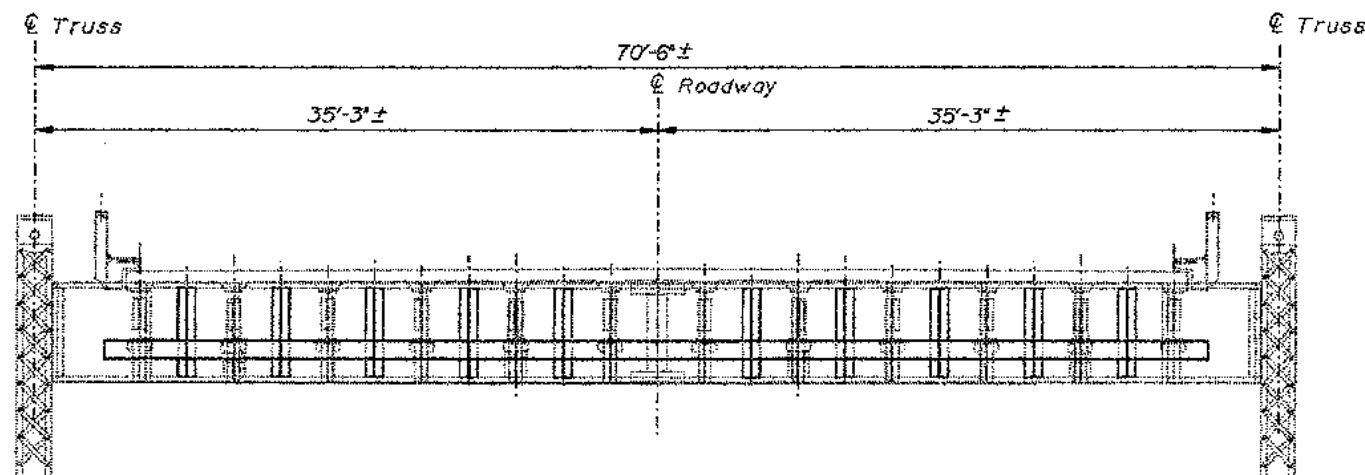
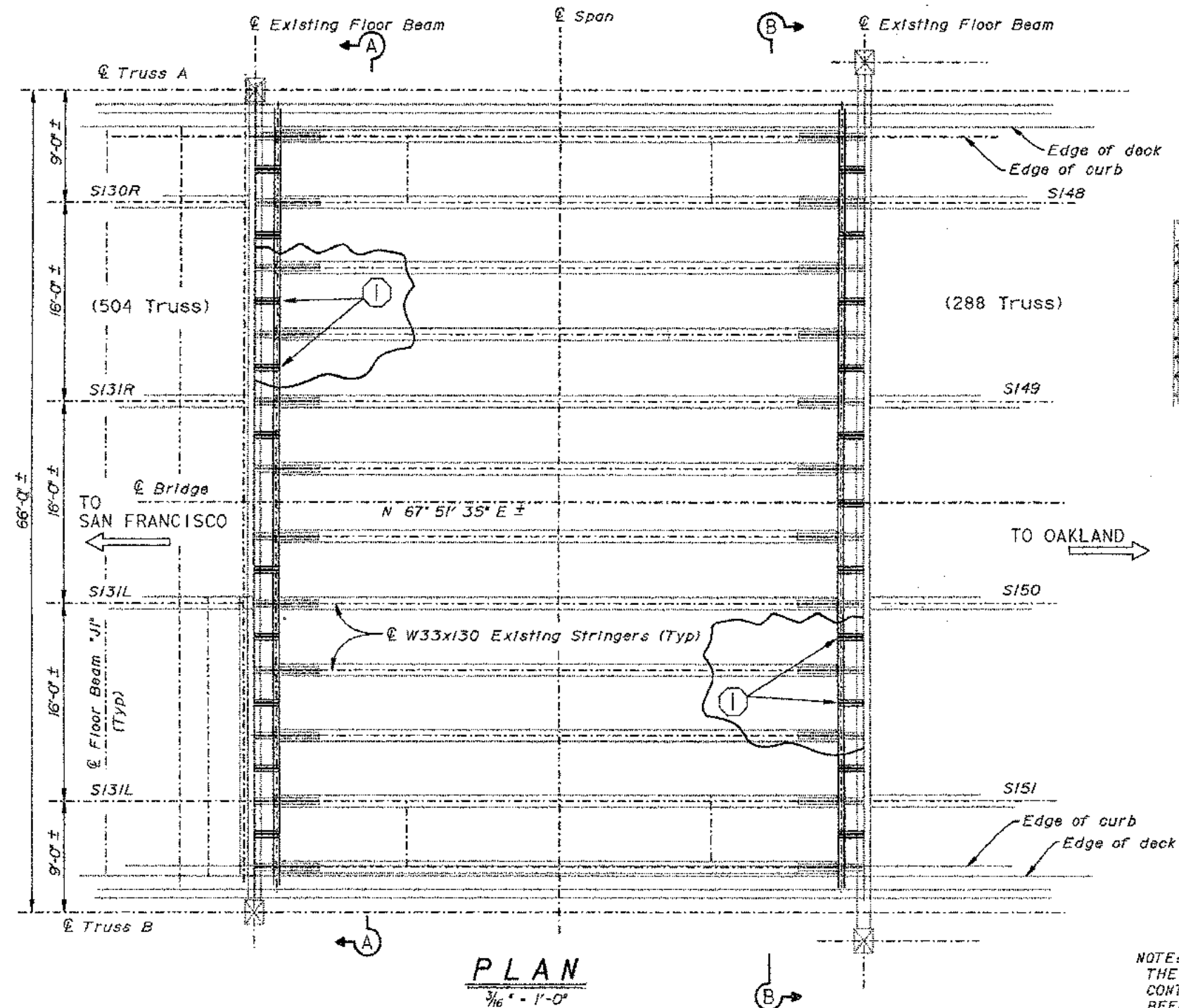
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9, 0.0/1.1	146	205

Stephen W. Mitchell  
REGISTERED ENGINEER - CIVIL  
November 3, 1997



12-8-97  
PLANS APPROVAL DATE

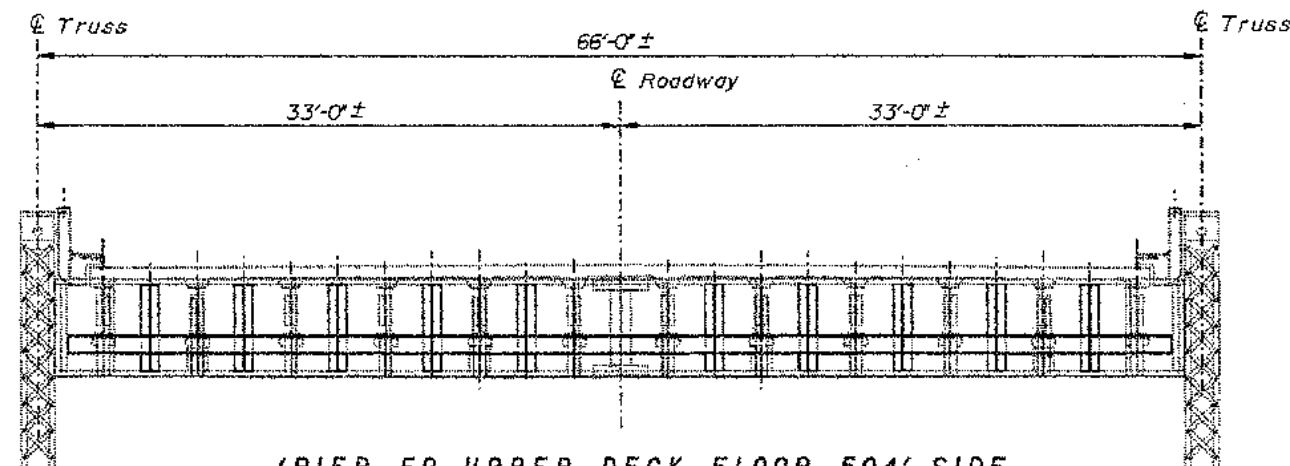
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



(PIER E9 UPPER DECK FLOOR 288' SIDE  
EAST FLOOR BEAM LOOKING EAST)

## SECTION B-B

3/16\"/>



(PIER E9 UPPER DECK FLOOR 504' SIDE  
WEST FLOOR BEAM LOOKING WEST)

## SECTION A-A

3/16\"/>

NOTE:  
THE CONTRACTOR SHALL VERIFY ALL  
CONTROLLING FIELD DIMENSIONS  
BEFORE ORDERING OR FABRICATION  
ANY MATERIAL.

INTERIM SEISMIC RETROFIT PROJECT  
EAST BAY 504 TRUSSES

DESIGN	BY Steve Mitchell	5-97	CHECKED Taka Sadek	5-97
DETAILS	BY Ralph Nakagawa	5-97	CHECKED Taka Sadek	5-97
QUANTITIES	BY Steve Mitchell	5-97	CHECKED Taka Sadek	5-97

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES  
STRUCTURE DESIGN  
TOLL BRIDGES SPECIAL ANALYSIS

BRIDGE NO.	33-0025
POST MILE	1.15

SAN FRANCISCO-OAKLAND BAY BRIDGE  
STRUCTURE PLAN 50' SPAN-UPPER DECK

LEGEND

- Indicates Existing Structure  
————— Indicates New Construction

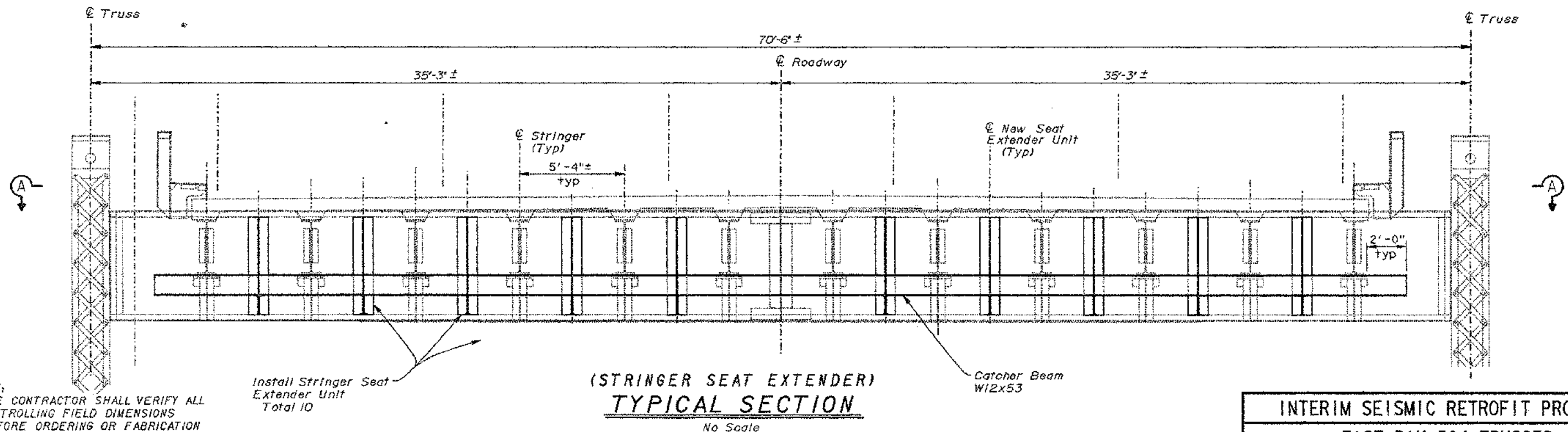
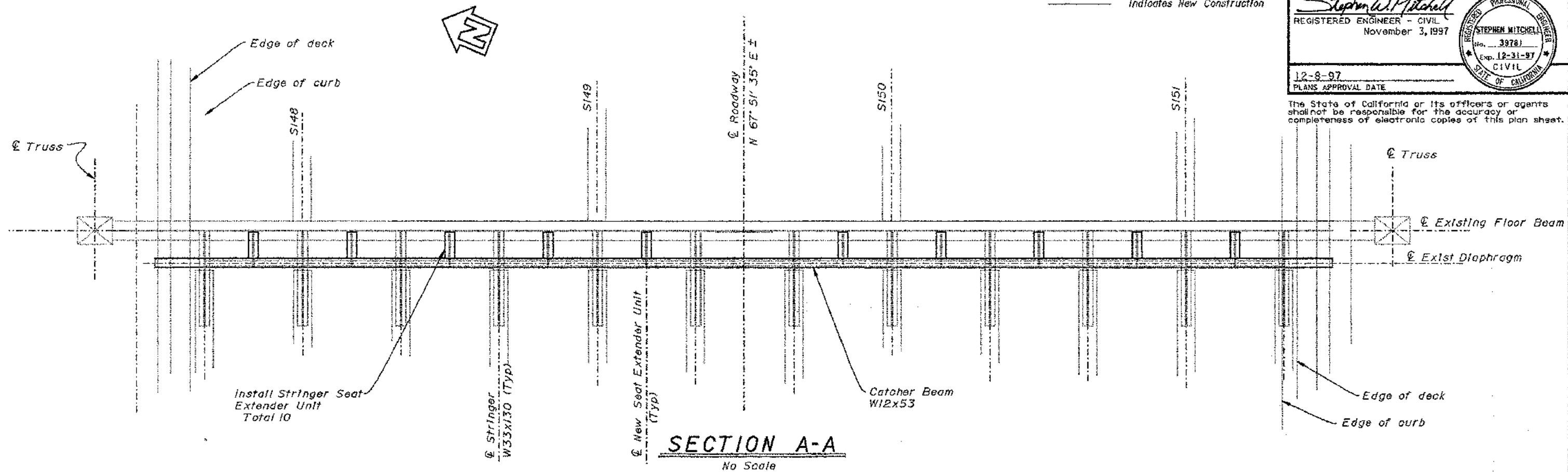
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9 0.0/1.1	147	205

*Stephen W. Mitchell*  
REGISTERED ENGINEER - CIVIL  
November 3, 1997



12-8-97  
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



NOTE:  
THE CONTRACTOR SHALL VERIFY ALL  
CONTROLLING FIELD DIMENSIONS  
BEFORE ORDERING OR FABRICATION  
ANY MATERIAL.

Install Stringer Seat  
Extender Unit  
Total 10

(STRINGER SEAT EXTENDER)  
**TYPICAL SECTION**

No Scale

INTERIM SEISMIC RETROFIT PROJECT	
EAST BAY 504 TRUSSES	
SAN FRANCISCO-OAKLAND BAY BRIDGE	
UPPER DECK SEAT EXTENDER DET. NO. 1	

DESIGN	BY Steve Mitchell	5-97	CHECKED Talal Sadek	5-97
DETAILS	BY Ralph Nakagawa	5-97	CHECKED Talal Sadek	5-97
QUANTITIES	BY Steve Mitchell	5-97	CHECKED Talal Sadek	5-97

STATE OF CALIFORNIA	DIVISION OF STRUCTURES
DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN
	TOLL BRIDGES SPECIAL ANALYSIS

BRIDGE NO.	33-0025
POST MILE	1.15

DISCARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 25 OF 29
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DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF. Alameda	80	7.8/8.9 0.0/1.1	148	205

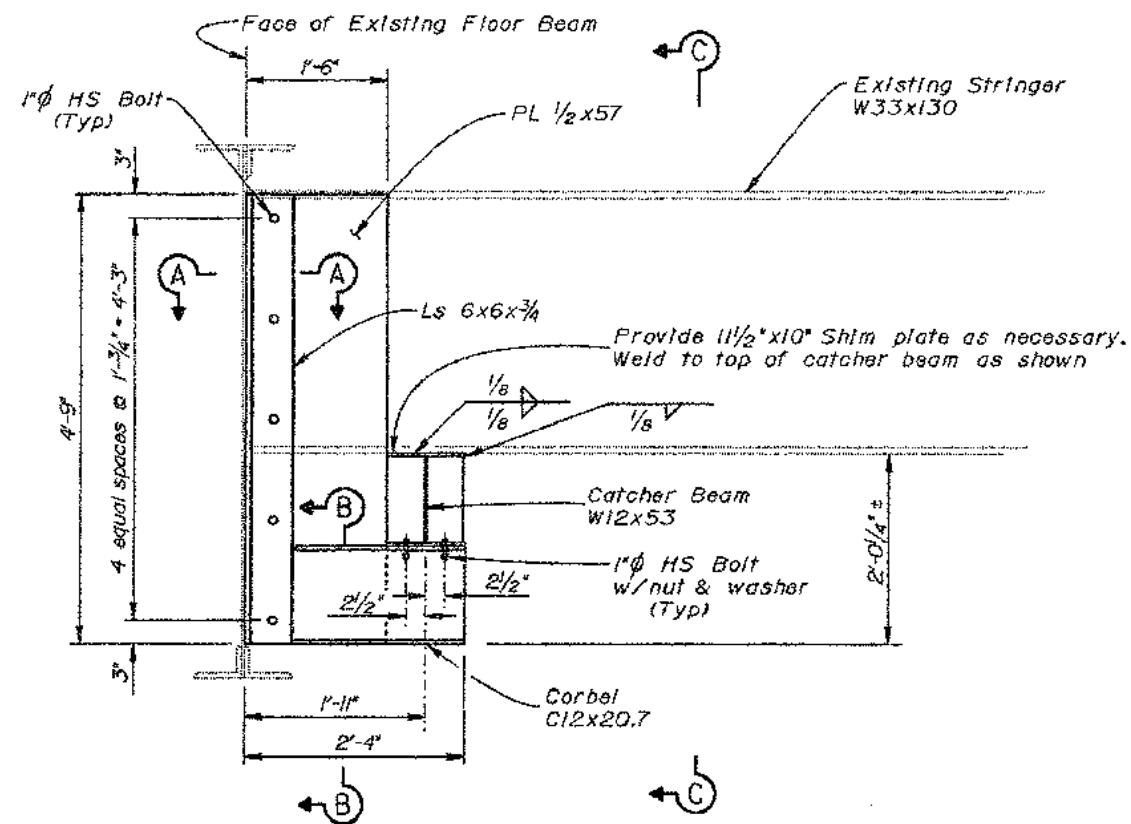
Stephen W. Mitchell  
 REGISTERED ENGINEER - CIVIL  
 November 3, 1997  
 12-8-97  
 PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

39781  
 CIVIL  
 STATE OF CALIFORNIA

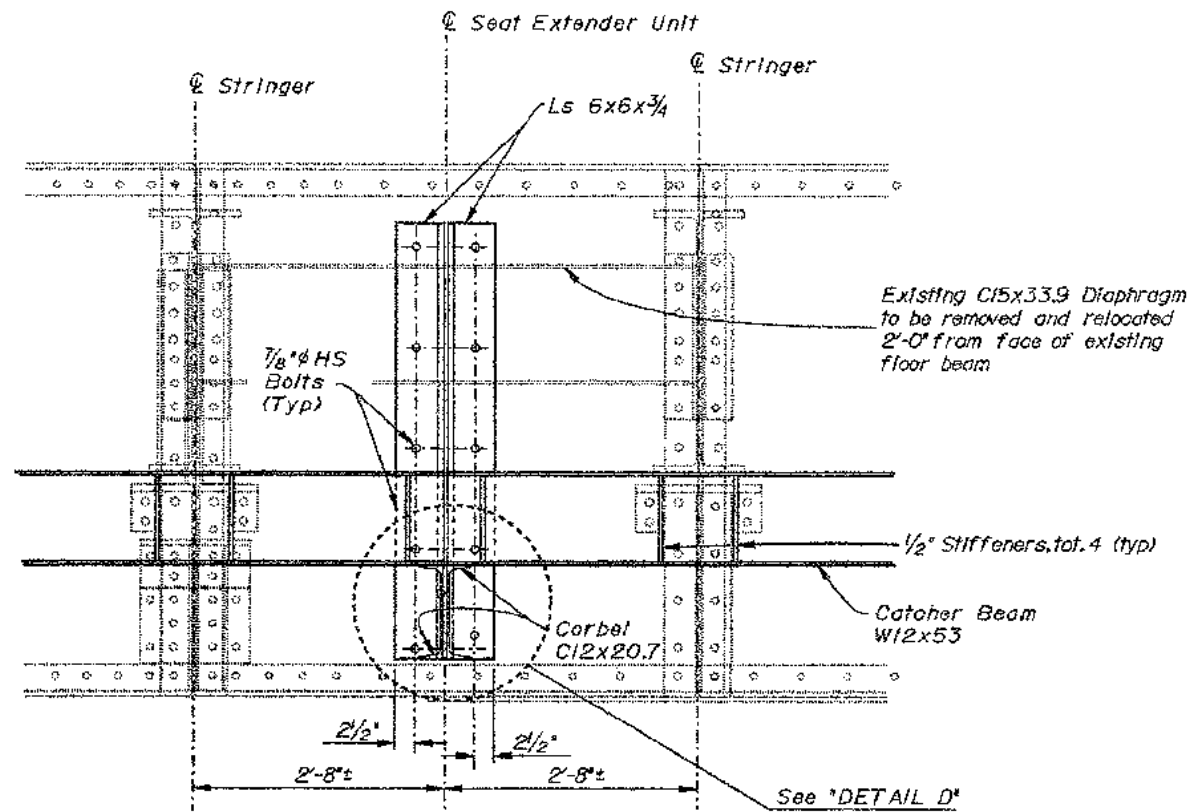
# LEGEND

- Indicates Existing Structure
- Indicates New Construction



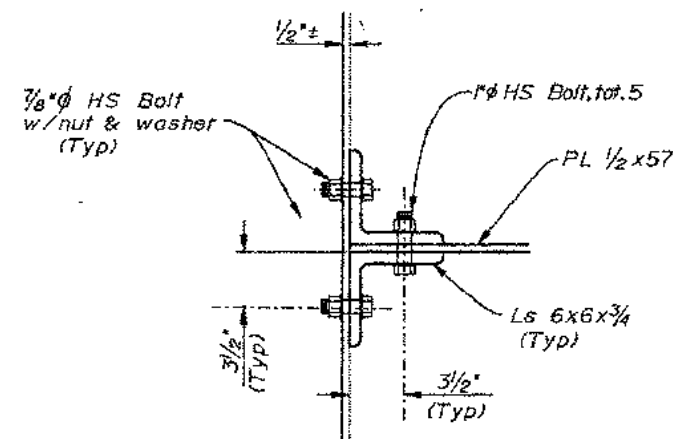
**CORBEL DETAIL**

1" = 1'-0"



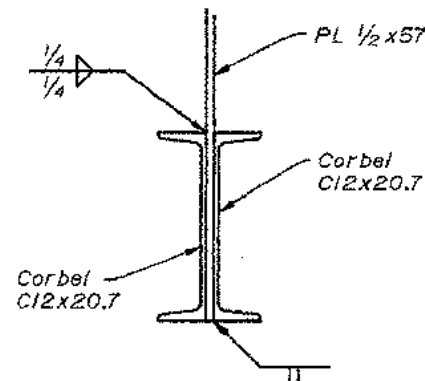
**SECTION C-C**

1" = 1'-0"



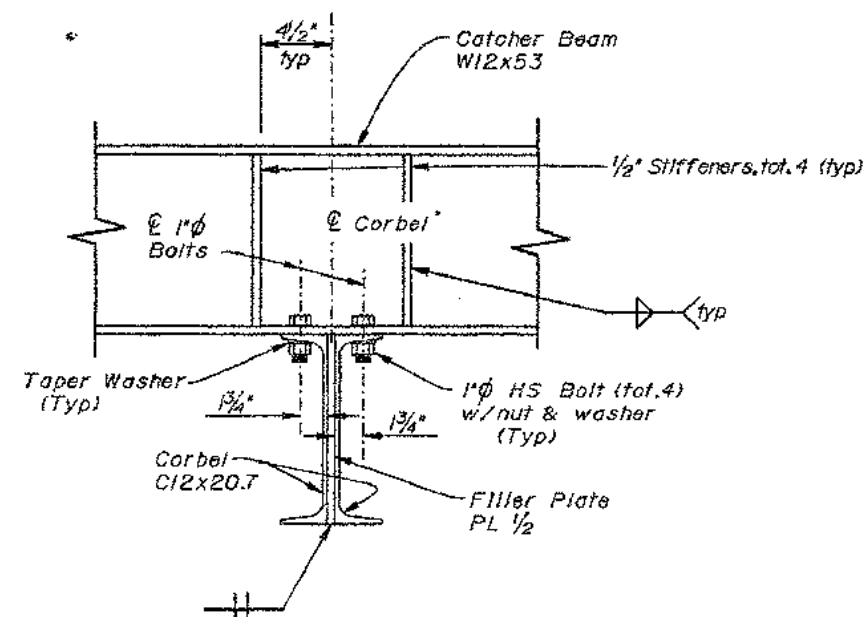
**SECTION A-A**

2" = 1'-0"



**SECTION B-B**

2" = 1'-0"



**DETAIL D**

2" = 1'-0"

Note:  
 1. All Fasteners are ASTM A490 HS Bolts, Hex HD, with nuts and washers in new holes.

NOTE:  
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATION ANY MATERIAL.

DESIGN	BY Steve Mitchell	5-97	CHECKED Taha Sadek	5-97
DETAILS	BY Ralph Nakagawa	5-97	CHECKED Taha Sadek	5-97
QUANTITIES	BY Steve Mitchell	5-97	CHECKED Taha Sadek	5-97

STATE OF CALIFORNIA	DIVISION OF STRUCTURES
DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN
	TOLL BRIDGES SPECIAL ANALYSIS

BRIDGE NO.	33-0025	POST MILE	1.15
INTERIM SEISMIC RETROFIT PROJECT			
EAST BAY 504 TRUSSES			
SAN FRANCISCO-OAKLAND BAY BRIDGE			
UPPER DECK SEAT EXTENDER DET. NO. 2			

OS OSD 239 (CARD 10/96)	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 043001	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 26 OF 29
USERNAME: trfenard atduse2.09101717					

DATE PLOTTED: 9-9-97  
 TIME PLOTTED: 10:25

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9 0.0/1.1	149	205

*Stephen W. Mitchell*  
REGISTERED ENGINEER - CIVIL  
November 3, 1997

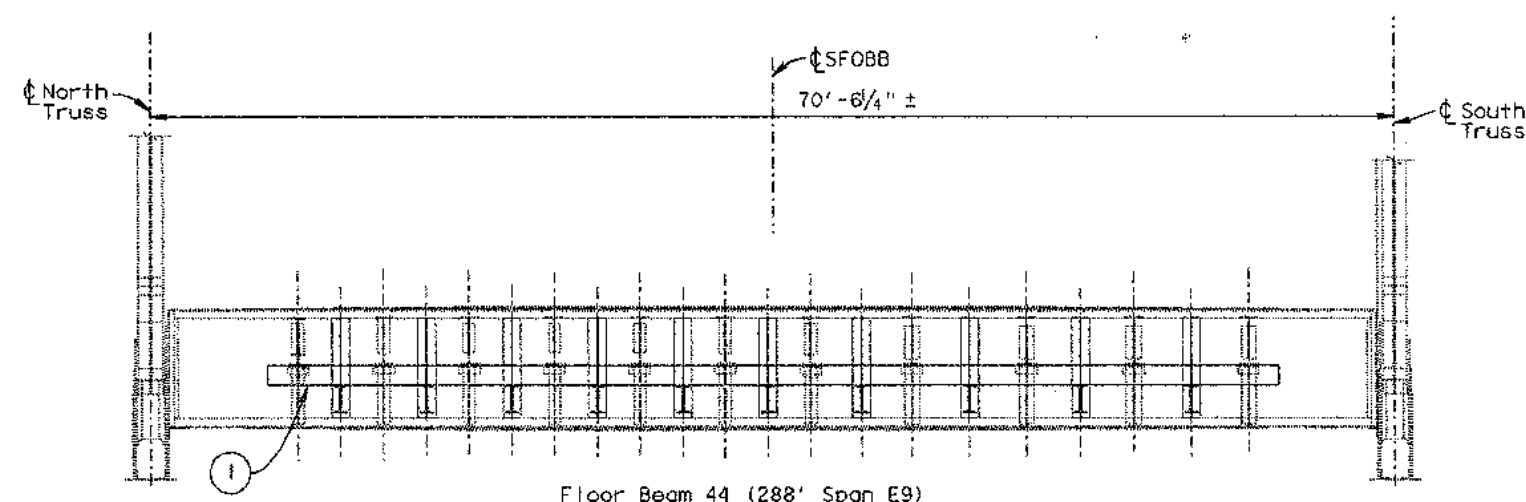
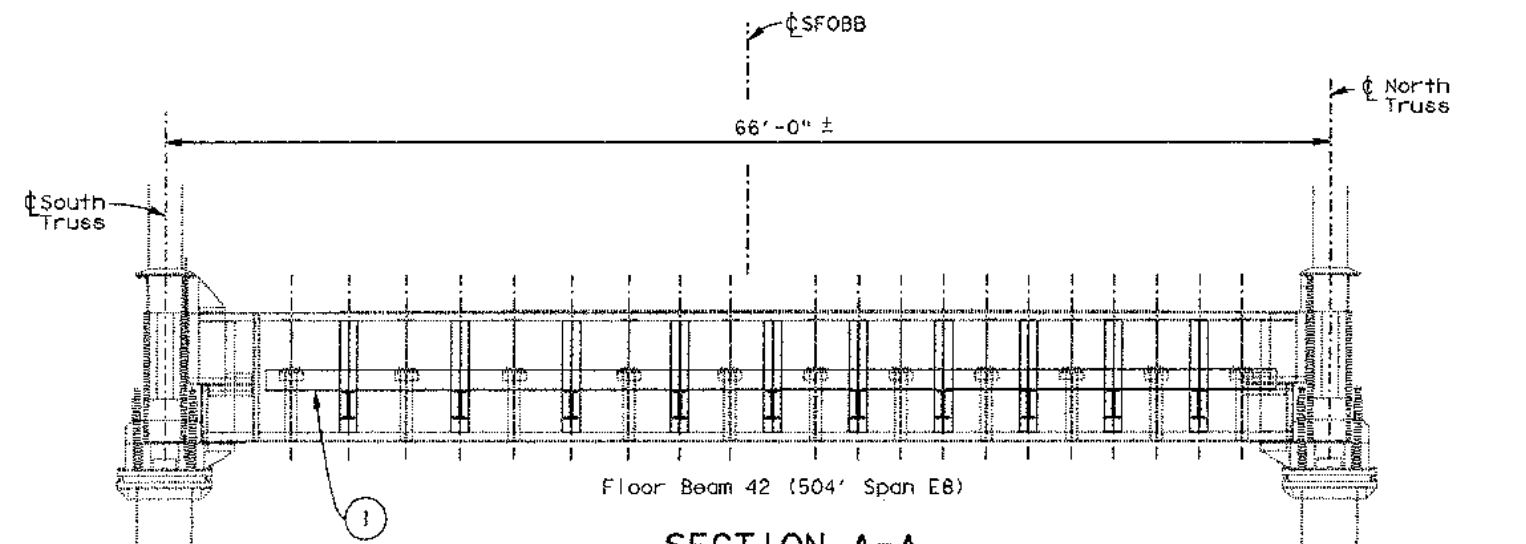
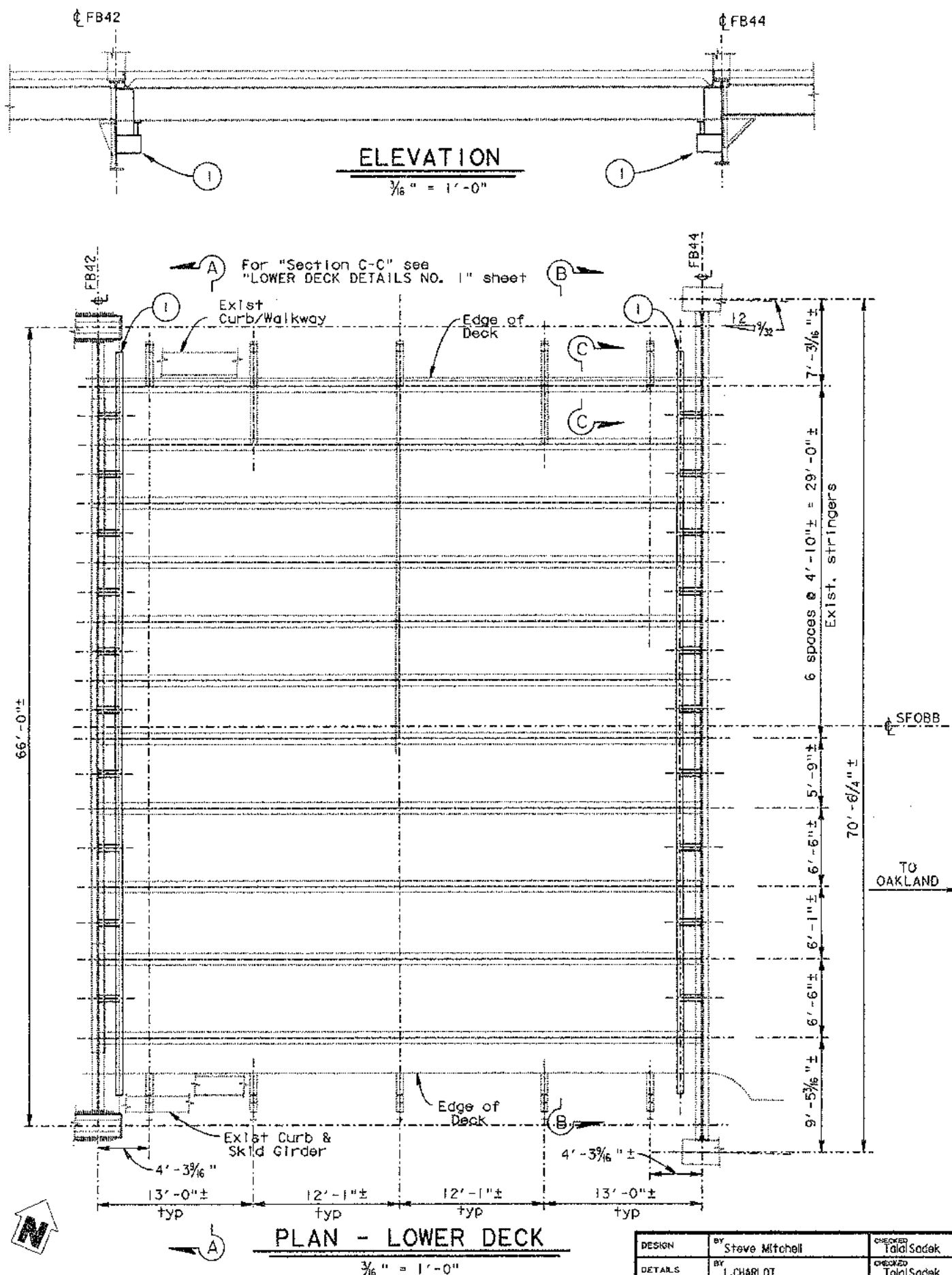


12-8-97  
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

# RETROFIT LEGEND

- ① Install stringer seat extenders.
- Indicates existing structure
- Indicates new construction



NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

NOTES:  
For traffic staging, see "ROAD PLANS"

## INTERIM SEISMIC RETROFIT PROJECT EAST BAY 504 TRUSSES

## SAN FRANCISCO-OAKLAND BAY BRIDGE STRUCTURE PLAN 50' SPAN-LOWER DECK

DESIGN	BY Steve Mitchell	CHECKED Taha Sadak
DETAILS	BY L. CHARLOT	CHECKED Taha Sadak
QUANTITIES	BY Steve Mitchell	CHECKED Taha Sadak
<div> <div>STATE OF CALIFORNIA</div> <div>DIVISION OF STRUCTURES</div> <div>STRUCTURE DESIGN</div> <div>DEPARTMENT OF TRANSPORTATION</div> <div>TOLL BRIDGES SPECIAL ANALYSIS</div> </div>		
<div> <div>BRIDGE NO.</div> <div>33-25</div> <div>POST MILE</div> <div>1.15</div> </div>		
<div> <div>CU 04</div> <div>EA 043001</div> </div>		

ORIGINAL SCALE IN INCHES  
FOR REDUCED PLANS

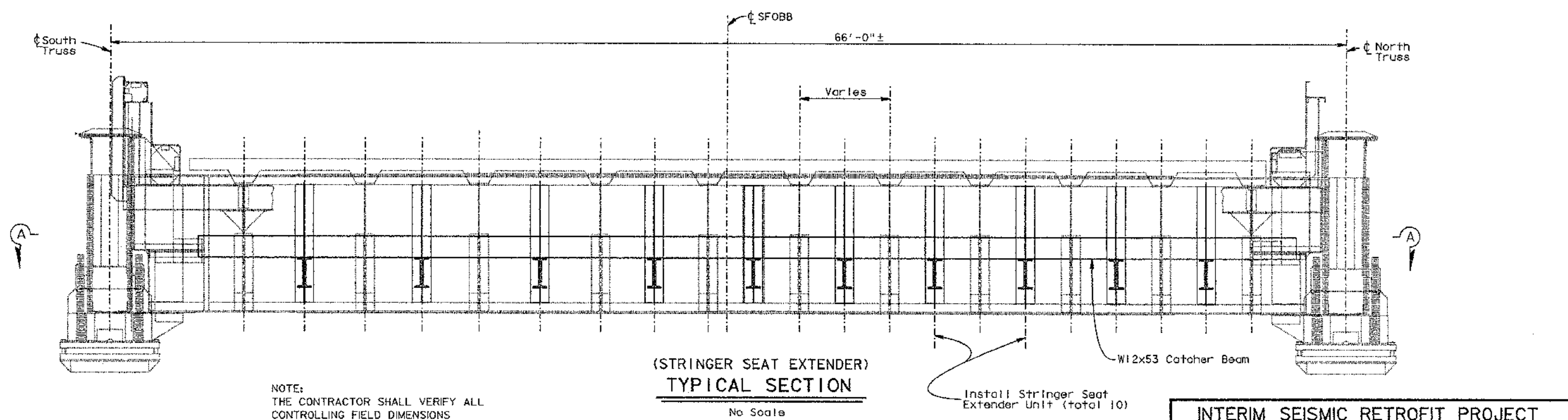
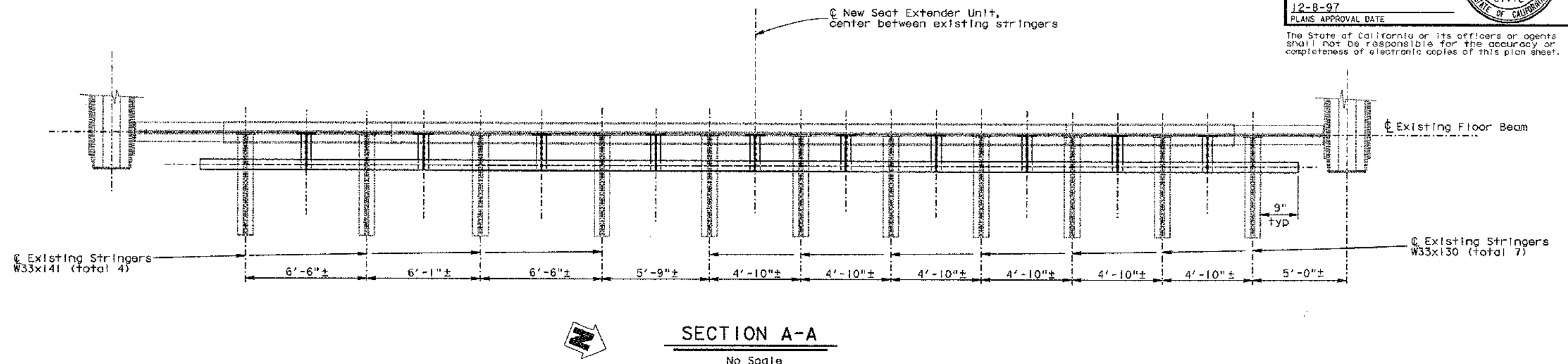
REVISION DATES (PRECEDENCE STAGE ONLY)	SHEET	UP
1-1-96 1-2-96 1-27-97 5-8-97 5-8-97 8-29-97	27	29

USERNAME => trlhard  
dnldsp\_09101718

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alameda	80	7.8/8.9 0.0/1.1	150	205

**Stephen W. Mitchell**  
REGISTERED ENGINEER - CIVIL  
November 3, 1997  
12-8-97  
PLANS APPROVAL DATE

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NOTE:  
THE CONTRACTOR SHALL VERIFY ALL  
CONTROLLING FIELD DIMENSIONS  
BEFORE ORDERING OR FABRICATING  
ANY MATERIAL.

DESIGN	BY J.AVILA	CHECKED Talal Sadek	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN TOLL BRIDGES SPECIAL ANALYSIS	BRIDGE NO.	33-25 POST MILE 1.15
DETAILS	BY L.CHARLOT	CHECKED Talal Sadek				
QUANTITIES	BY Steve Mitchell	CHECKED Talal Sadek				

INTERIM SEISMIC RETROFIT PROJECT	
EAST BAY 504 TRUSSES	
SAN FRANCISCO-OAKLAND BAY BRIDGE	
LOWER DECK SEAT EXTENDER DETAIL NO.1	

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF, Alq	80	7.8/8.9, 0.0/1.1	151	205

*Stephen W. Mitchell*  
REGISTERED ENGINEER - CIVIL  
November 3, 1997

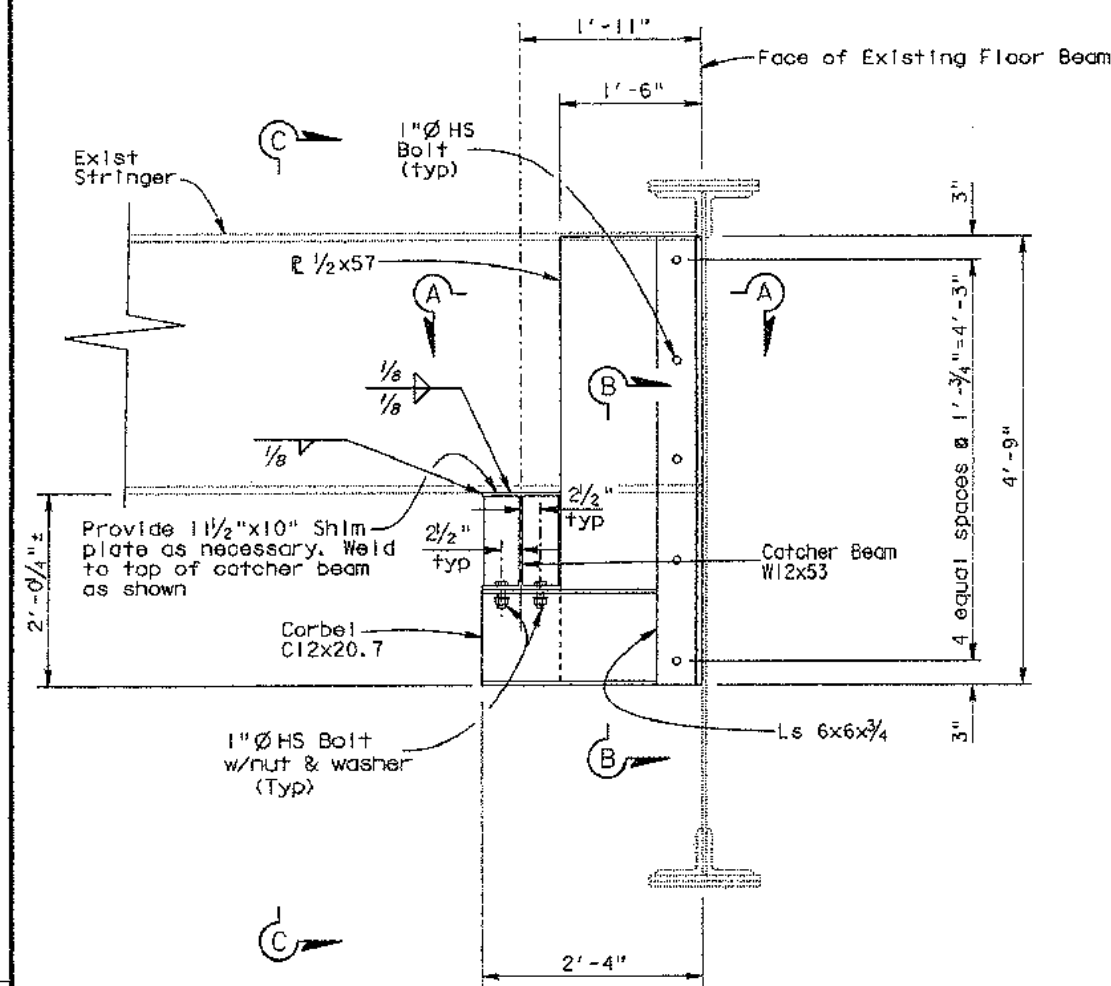


12-8-97  
PLANS APPROVAL DATE

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#### LEGEND

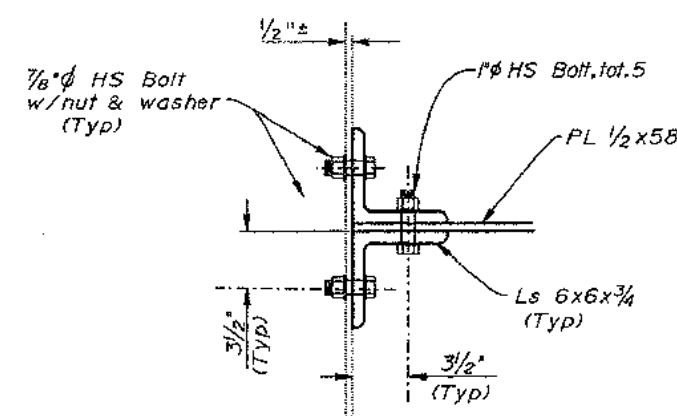
— Indicates Existing Structure  
— Indicates New Construction



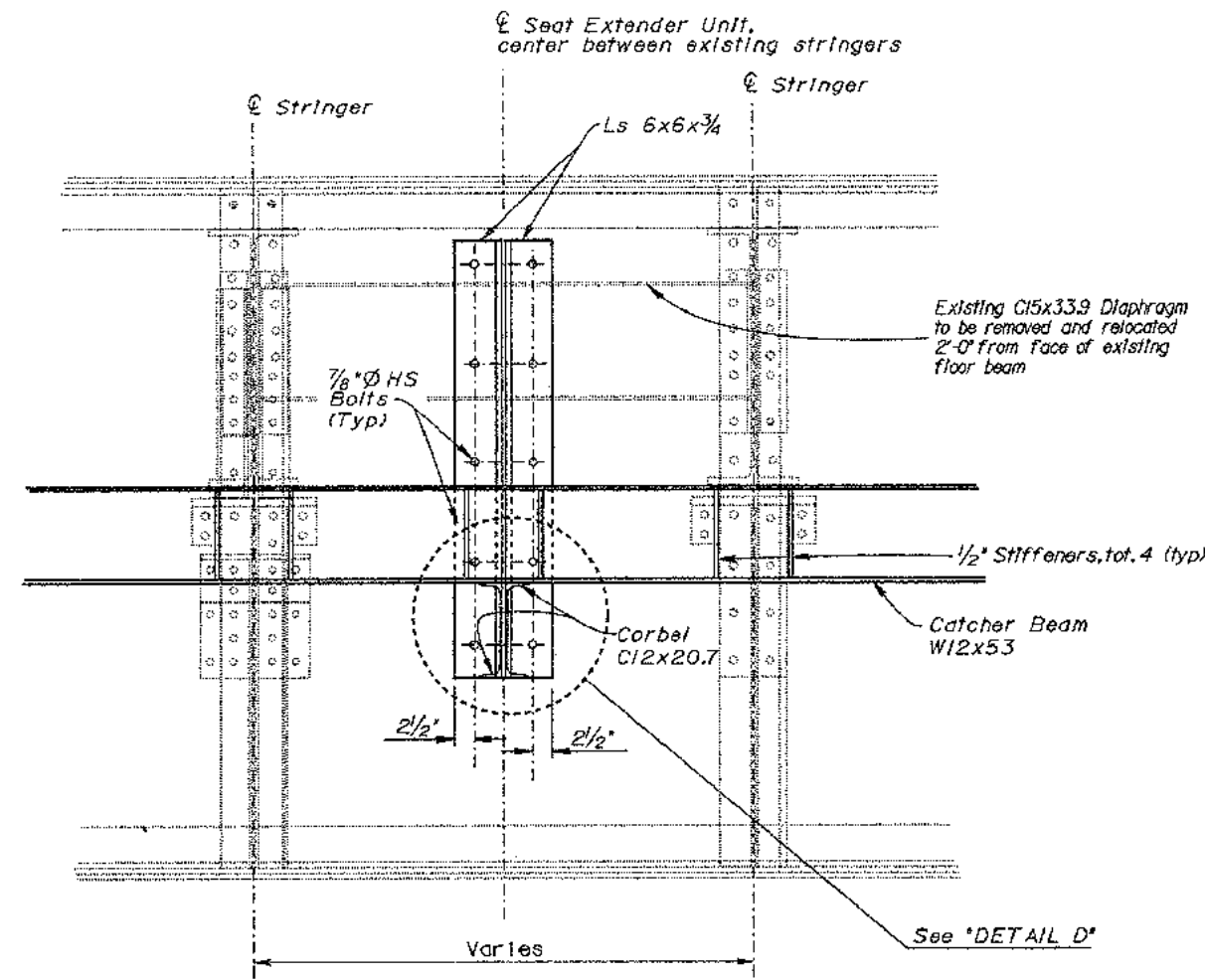
**CORBEL DETAIL**  
1" = 1'-0"

#### NOTE:

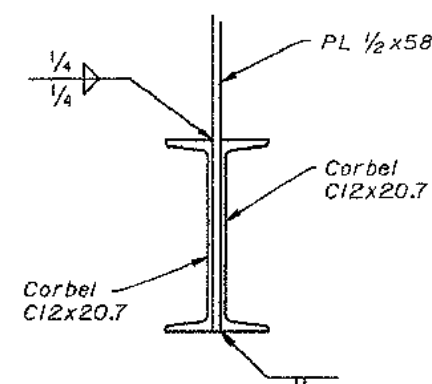
All fasteners are ASTM A490 H.S. bolts, hex hd, with nuts and washers in new holes.



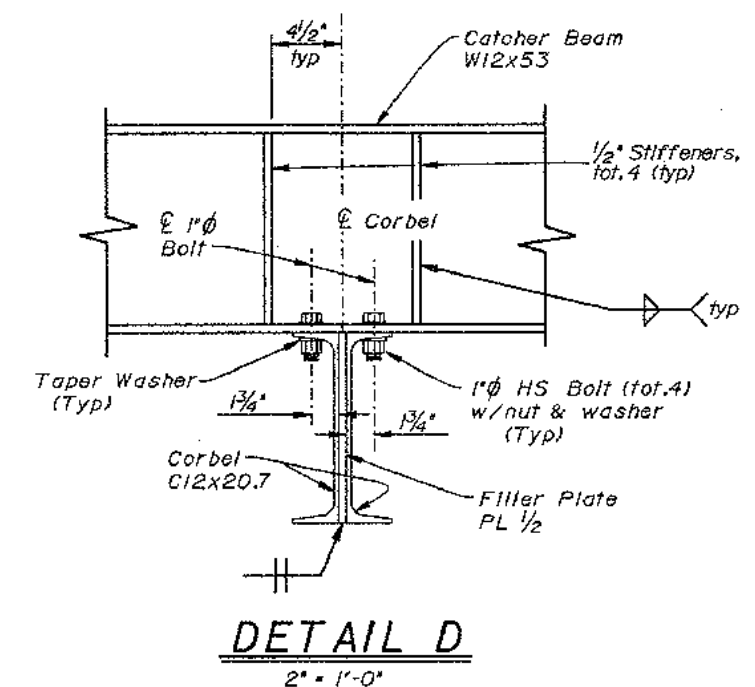
**SECTION A-A**  
2" = 1'-0"



**SECTION C-C**  
1" = 1'-0"



**SECTION B-B**  
2" = 1'-0"



**DETAIL D**  
2" = 1'-0"

NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATION ANY MATERIAL.

				DESIGN	BY Steve Mitchell	5-97	CHECKED Taha Sadek	5-97	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN TOLL BRIDGES SPECIAL ANALYSIS	BRIDGE NO.	SAN FRANCISCO-OAKLAND BAY BRIDGE										
				DETAILS	BY Ralph Nakagawa	5-97	CHECKED Taha Sadek	5-97			33-0025											
				QUANTITIES	BY Steve Mitchell	5-97	CHECKED Taha Sadek	5-97			POST MILE	LOWER DECK SEAT EXTENDER DET. NO. 2										
											1.15											
DS 060 219 (CADD 10/95)										ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 043001	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)								SHEET	OF
													5-0-97	6-1-97	6-10-97	6-20-97	6-28-97	7-1-97	9-28-97	10-29-97	29	29